

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Medical Lib PUBLISHED MONTHLY BY THE MINNESOTA STATE MEDICAL ASSOCIATION

Volume XII
Number 11

NOVEMBER, 1929

25 cents a copy
\$3.00 a year

CONTENTS

THE THYROID AS A CAUSE OF CARDIAC DIS- ABILITY. <i>Donald K. Bacon, M.D., Saint Paul</i>	659	EDITORIAL:	
PRELIMINARY HEMOSTASIS IN THYROIDECTOMY. <i>Martin Nordland, M.D., F.A.C.S., Minne- apolis</i>	663	Medical Alumni Homecoming.....	707
THE EXOPHTHALMOS OF GRAVES' DISEASE. <i>Frank E. Burch, M.D., Saint Paul</i>	668	Regulation of X-ray Film Storage.....	707
PROGRESS IN KNOWLEDGE OF GOITER WITH PAR- TICULAR ATTENTION TO SURGICAL TREAT- MENT. <i>John deJ. Pemberton, M.D., Rochester</i>	676	Irradiated Ergosterol and Cod Liver Oil in the Prevention of Rickets.....	708
THE TREATMENT OF TOXIC THYROID WITH RAYS OF SHORT WAVE LENGTH. <i>Gage Clement, M.D., Duluth</i>	682	Historical Committee	709
THE EARLY DIAGNOSIS OF HEART DISEASE. <i>Charles Lyman Greene, M.D., and Joseph F. Borg, M.D., Saint Paul</i>	684	COMMITTEE ON PUBLIC HEALTH EDUCATION....	710
PURPURA HEMORRHAGICA FOLLOWING NEO- ARSPHENAMINE. <i>Julius Jensen, M.D., Minneapolis</i>	689	REPORTS AND ANNOUNCEMENTS OF SOCIETIES:	
SENSE OF HEARING SURVEY OF SCHOOL CHIL- DREN IN FERGUS FALLS. <i>W. L. Burnap, M.D., Fergus Falls</i>	691	Minnesota Society of Internal Medicine.....	711
TREATMENT OF ACUTE OTITIS MEDIA IN IN- FANTS AND CHILDREN. <i>C. Walter Rumpf, M.D., Faribault</i>	694	Clinical Meeting of the Medical Alumni, University of Minnesota.....	711
THE GENERAL HOSPITAL AND TUBERCULOSIS. <i>Helen H. Hielscher, M.D., Mankato</i>	700	St. Louis County Medical Society.....	711
THE COST OF MEDICAL CARE. <i>O. E. Locken, M.D., Crookston</i>	703	Hennepin County Medical Society New Home Celebration	711
PRESIDENT'S LETTER.....	706	Lyon-Lincoln County Medical Society.....	715
		Minnesota Surgical Society.....	715
		Northern Minnesota Medical Association....	715
		CONSULTATION BUREAU	716
		OBITUARY	717
		COMMUNICATION	717
		OF GENERAL INTEREST.....	718
		NEW AND NON-OFFICIAL REMEDIES.....	719
		MISCELLANEOUS:	
		State Board of Medical Examiners.....	719
		PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE	720
		PROGRESS:	
		Medicine	724
		Surgery	725
		Pediatrics	726
		Roentgenology	727
		Eye, Ear, Nose and Throat.....	727
		BOOK REVIEWS	728

Business Manager: J. R. BRUCE, 2429 University Avenue, Saint Paul, Minnesota
Telephone NE stor 1381

MEAD'S POLICY

MEAD'S INFANT DIET MATERIALS
ARE ADVERTISED ONLY TO PHYSICIANS.
NO FEEDING DIRECTIONS ACCOMPANY
TRADE PACKAGES • INFORMATION IN
REGARD TO FEEDING IS SUPPLIED
TO THE MOTHER BY WRITTEN
INSTRUCTIONS FROM HER DOCTOR
WHO CHANGES THE FEEDINGS
FROM TIME TO TIME TO MEET
THE NUTRITIONAL REQUIRE-
MENTS OF THE GROWING
INFANT • LITERATURE IS
FURNISHED ONLY TO
PHYSICIANS.

FROM the be-
ginning, Mead
Johnson & Company
have cooperated only with
physicians, never advertising to
the public, never enclosing
descriptive literature with
packages, never printing di-
rections on packages, nor ex-
ploiting the medical profession
in any way. For years, we
have thrown all our resources
in research, money and honor
into keeping infant feeding

where it belongs—
in the hands of the
physician. ¶ If, in this day
of commercial meddling and
gratuitous medical advice, the
Mead policy is in the interest
of the medical profession's own
future, should it not have your
whole-hearted active as well
as passive support? Your
use of Dextri-Maltose and
other Mead products reflects
your approval of this policy.
Is it worth your while?

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society.

VOL. XII

NOVEMBER, 1929

No. 11

THE THYROID AS A CAUSE OF CARDIAC DISABILITY*

DONALD K. BACON, M.D.
Saint Paul

MODERN hygiene and preventive medicine have caused a remarkable decrease in the incidence and mortality of many diseases. The list includes those of a contagious, infectious and venereal nature. In addition, certain conditions resting on a metabolic basis are better held in check by the application of recently acquired knowledge. The use of insulin in diabetes and of iodine in goiter illustrate this class. With these advances the sum total of illness has markedly lessened and vital statistics show a steady improvement.

Other types of disease, in contrast, show little if any decrease and are steadily gaining greater prominence as causes of disability and death. Of recent years State and National bureaus of vital statistics as well as the larger insurance companies have repeatedly called attention to the ever mounting percentage of deaths from so-called heart disease. Some find this only a relative increase; others believe it to be an actual numerical increase which is greater than any corresponding increase of population.

Only a few of the many and varied types of heart disease will be mentioned here and their outstanding pathologic features touched upon. These are:

1. Hypertensive disease, usually associated with a progressive renal impairment, cardiac hypertrophy from overwork, sclerotic changes in the aorta and arteries and later atrophy of the heart muscle, rupture of an unsound cerebral vessel or failure of the renal filter with anuremic death.

2. Leucic disease which is primarily accompanied by an endarteritis of the smaller vessels and coronary arteries producing a deficiency of blood and oxygen supply to the heart. The

lesions of the disease are most marked about the aorta and its valve, aneurysm is common and degenerative changes in the heart muscle are often present.

3. Rheumatic infection by the organisms of the streptococcus group, commonly considered the cause of rheumatic fever, chorea and focal infection in general. It may be mild or so severe as to end fatally in a few days. Actual inflammation of the endocardium and heart muscle as distinguished from the degenerative processes may be found in this particular form of cardiac disease. The lesions are most commonly on the left side of the heart and consist of damage to the mitral and less frequently to the aortic valve with sometimes an actual reduction in the power of the heart muscle as a result of inflammation and subsequent fibrosis.

Of greatest interest for the purposes of this paper are those conditions of the heart which follow hyperactivity of the thyroid gland. The protruding eyes, pulsating gland, moist skin, tremor and rapid irregular heart beat of exophthalmic goiter are so characteristic that the diagnosis is often correctly made by laymen. Here the cardiac lesions are less characteristic and distinctive than in any of the other types and there are few if any constant changes found at necropsy. Many of the disturbances seem to be confined to the conductive system and are looked upon as largely functional in nature. In the more severe and prolonged cases, however, there is probably some muscular damage. Goodall and Rogers¹ report these changes, in brief, to be those of an interstitial myocarditis. There are hyaline degeneration and necrosis of many bundles of muscle fibres and some infiltration of phagocytic cells. Certain of the necrotic areas are infiltrated by dilated capillaries choked with

*Presented before the annual meeting of the Minnesota State Medical Association, St. Paul, May 14, 1929.

endothelial cells. These authors also point to electrocardiographic evidence of myocardial damage. Valvular changes, with the exception of the relative insufficiency associated with ventricular dilatation, are conspicuous only because of their infrequency.

The functional disturbances are most distressing to the patient but early in the disease may be intermittent and their true significance is sometimes not appreciated by the clinician. Tachycardia of more or less severity is the most common and one of the earliest signs to appear but is of limited value in diagnosis. At times this assumes the form of typical paroxysmal tachycardia. Krumbhaar,² in 1918, reported auricular fibrillation, auricular flutter, sinus arrhythmia, ventricular extrasystoles and delayed conductivity found in the electrocardiographic examination of a series of thyrotoxic cases. Other authors report similar findings.

Typical exophthalmic goiter offers no particular difficulty in diagnosis and that diagnosis suggests the treatment. When, however, a patient presents him- or herself with a purely cardiac complaint and shows no distinctive signs the problem of classification may be a most difficult one. To illustrate, the author wishes to present seven cases seen within the past few years whose complaints were purely cardiac. Careful study, quite prolonged in several instances, followed by thyroidectomy has resulted in vast improvement or cure in them all.

CASE REPORTS

Case 1.—Mrs. G., a married woman aged 53, had a peculiar, irritable disposition. She was easily excited and in addition possessed a mild pathologic fear of strange locations and travel, and was not at ease except in her own house. She had complained of cardiac rapidity and palpitation for about four years which her family had discounted because of her peculiar personality.

Her basal metabolism was plus 4 per cent. Her pulse was constantly above 100 with frequent premature beats. There was no exophthalmos, no enlargement of the neck, but the thyroid could be felt by deep palpation. Blood pressure was systolic 190 and diastolic 100. There was a tremor of the hands when she became alarmed or excited. Administration of 10 minims of Lugol's solution after meals for a week reduced the pulse rate to an average of 90, the blood pressure to 170/90. There was a sense of increased well being and a temporary cessation of complaint about her heart. The iodine was stopped and within a month her former symptoms had returned accompanied by visible enlargement of the thyroid.

Thyroidectomy was performed October 2, 1926, and after a mild post-operative reaction she made a good recovery and returned home. Since that time she has gained thirty pounds in weight. Her pulse varies from 82 to 88, the systolic pressure remains about 160 and she denies having cardiac symptoms.

Case 2.—Mrs. M., a woman of forty-eight, who looked much older, had had "heart trouble" for about five years. It had recently become more severe and she had had palpitation, tachycardia, shortness of breath and some swelling of the ankles. She had been unable to eat, had suffered from diarrhea, had had albumin in the urine, and she had lost 10 to 12 pounds.

The pulse varied from 120 to 130 and was markedly irregular. The skin was moist and a tremor of the hands was present. The thyroid showed a small, almost insignificant discrete cyst in the left lobe. The basal metabolic rate was plus 25 per cent.

A removal of the cystic portion of the left lobe was done August 27, 1926. She had a mild post-operative reaction and left the hospital after eleven days. The diarrhea ceased almost at once and her appetite returned. The cardiac symptoms rapidly improved. After eight months she had gained forty pounds, the heart was regular and quiet and varied from 80 to 90 in rate. There was no sweating and she was symptom-free.

Case 3.—Miss L., a single woman of twenty-two years, had for the past two years been troubled with intermittent attacks of cardiac palpitation and rapidity of the pulse. For the past six months these attacks had been coming at more and more frequent intervals. Between attacks she felt well and was able to live a normal, active life. The heart during these attacks attained a rate of 120 to 130 beats per minute and there was a definite precordial impulse. She complained of pains in the left shoulder and arm and was quite nervous and apprehensive. Between attacks the rate was 76 to 80 and she was symptomless.

There was a slight fullness of the neck which had been present for many years and the thyroid could be palpated. The blood pressure was systolic 120 and diastolic 64 and the basal metabolic rate plus 100. She was given Lugol's solution, 10 minims after meals, and remained symptomless for about one month, the longest period for over a year. There was a decrease in the size of the neck at this time. This was followed by an increase and she had several mild cardiac attacks.

Thyroidectomy was performed February 11, 1927, and she made an uneventful post-operative recovery. Colloid goiter was the laboratory report. This young woman was married a month and a half afterward and almost immediately became pregnant. She suffered occasional cardiac attacks for about six months but they became less frequent and she has now been symptom-free for more than a year.

Case 4.—Mrs. J. V., a rather stout Italian woman of thirty-three years, had for the past three or four years been gradually losing her strength and for a

year had been troubled by her heart. She was always aware of its beating, which was frequently rapid and she had pain at intervals in the left arm and shoulder. Her appetite was quite large and she had lost no weight.

There was no exophthalmos, no sweating, no tremor, no enlargement of the neck and the thyroid was not palpable. There was a slight pulsation in the neck and a bruit could be heard. Her pulse rate averaged 100 and rapidly rose to a higher rate on exertion. The heart was regular and there were no thrills nor murmurs present. The blood pressure registered 140 systolic and 64 diastolic. The basal metabolic rate was plus 28 per cent.

Thyroidectomy was performed June 21, 1927. She made a satisfactory post-operative recovery and four months after discharge was symptom-free and felt that she had made a complete recovery. Her pulse rate averaged 80 and no longer responded abnormally to exercise or emotion. She had gained a few pounds in weight but stated that her appetite was no longer as large as formerly.

Case 5.—Mrs. H., aged 40, widowed with two children, had had three attacks of chorea earlier in life. For a year she had had attacks of cardiac palpitation associated with fainting spells. She was somewhat nervous and had lost 8 to 10 pounds in weight. In the intervals between attacks she had felt well and had had no symptoms referable to the heart.

There was no enlargement nor pulsation of the thyroid; no sweating or other vasomotor disturbance. There was no exophthalmos. The blood Wassermann was negative. The heart rate averaged 90. The heart was not enlarged and there were no thrills nor murmurs present. The basal metabolism was plus 16 per cent.

Thyroidectomy was done on October 17, 1927, from which she made an uneventful recovery. All cardiac complaint ceased and weakness and fainting spells disappeared. She was able to resume work, gained back her lost weight, her pulse became steady and regular with an average rate of 80.

Case 6.—Mrs. S., a widow aged 46, had had "heart trouble" for two years. She was continually conscious of her heart beat and excitement or exercise caused violent palpitation and shortness of breath. She had seen numerous physicians during the past year with no relief. She had been forced to discontinue her work and had resigned herself to the life of a chronic cardiac invalid.

The neck was not enlarged, but a moderate pulsation could be felt on palpation. She would sweat at intervals, but the skin was usually dry. The heart rate varied from 90 to 100. There was no cardiac enlargement, and there were no thrills nor murmurs present. Frequent premature beats occurred. The blood pressure was 150 systolic and 80 diastolic. Basal metabolism was plus 25 per cent.

Thyroidectomy was performed October 9, 1928. There was a moderately severe post-operative reaction followed by a good recovery. Almost immediate relief of cardiac symptoms resulted and has remained. She has gained about fifteen pounds in weight and has resumed a normally active life.

Case 7.—Miss E., a spinster of fifty-eight years, had suffered from shortness of breath, cardiac palpitation and pain in the left shoulder and arm for about eighteen months. She had had frequent headaches and some nocturia.

On examination it was found that her systolic pressure varied from 190 to 200 degrees. There was a trace of albumin in the urine. The heart was enlarged 2 cm. to the left and beat about 90 to 96 times per minute. There was a visible precordial impulse but no irregularity. There was no enlargement of the thyroid gland, no exophthalmos, a slight tremor, but no sweating. Metabolic estimation showed an increase of 35 per cent.

Thyroidectomy was done November 9, 1928. The patient made a good recovery and has since gained about twenty pounds in weight. The heart is much less active, the pulse is about 80 to 84, the blood pressure 165 to 170 and she feels fully recovered, with no complaints.

These cases are undoubtedly representative of a much larger and frequently misunderstood group. The thyroid etiology has caused Lahey to refer to this condition as thyro-cardiac disease—an apt and fitting term. It is this type which offers a fertile field for the statistical improvement of the cardiac group.

In the diagnosis of this condition, estimation of the basal metabolic rate is of the utmost importance and when it is increased practically clinches the diagnosis. But, when the reverse is true, can we with equal certainty dismiss the thyroid from further consideration? This is a question of some delicacy but in the author's opinion we cannot. Undoubtedly every case of Graves' disease shows an elevated basal rate during a large portion of its course, yet the evidence may be missing just when it is most needed, due to the presence of a minimal hyperthyroidism, an inactive phase of the condition, the inherent limitations of laboratory methods, etc. Strauss,³ Phillips,⁴ and others voice the belief that cardiac irregularity may antedate increase of the metabolic rate. Several readings should be taken at intervals to bridge, if possible, an inactive period. Even then it is possible to run into error, and watchful waiting until the inevitable happens and the metabolism does rise, is not always advisable.

The administration of iodine in these cases must be recognized as a two-edged sword with potentialities for the production of improvement or further damage. Views differ as to its mode of action on the hyperactive thyroid and until the question is settled its use must remain a bit empirical. That the colloid content of the gland is restored and that temporary clinical improve-

ment and reduction of the basal rate follow admits of no debate. But, does it result from the saturation of a hitherto uniodized thyroxin with a reduction of its chemical avidity, as Kendall⁵ and Plummer suggest, or does the increase of colloid exert a pressure which impedes the intrathyroid circulation, temporarily reducing the activity of the secreting cells and so lessening the amount of thyroxin released into the circulation; a view championed by Marine,⁶ Mosser⁷ and others.

Regardless of the exact mode of action, iodine is of considerable value in the formation of a diagnosis when more exact criteria are lacking. If, following its administration, there is a decrease in the heart rate, a lessening of the irregularity, loss of nervousness and tremor and a general symptomatic improvement in the patient the sequence is suggestive of a thyroid reaction. If after a short interval the symptoms return, perhaps even in an aggravated form, the resemblance is even more pronounced and may form a step in the process of diagnosis. This provocative use of iodine should be employed only in those obscure and borderline cases where the greatest uncertainty is present. If a thyroid condition is behind the symptoms it is apt to be unmasked. If the thyroid is innocent, a short course of iodine stimulation is not apt to cause irreparable harm. To the truth of this statement the army of luetics who consume iodine freely and frequently bears mute witness.

In the severe but more easily diagnosed cases of hyperthyroidism it is axiomatic that iodine should be employed only as a preoperative measure and that thyroidectomy should be done before the secondary reaction gets under way.

The usual physical signs of hyperthyroidism may seem to be absent, but a careful search should be made for them. Tremor may be intermittent and if so can usually be elicited by mild excitement. Glandular enlargement may be absent or so slight as to escape notice. Pulsation is at times present even when the gland is not visibly enlarged and its presence is suggestive. The ocular signs, if present, are valuable aids to diagnosis. If absent, and usually they are, it proves nothing.

Several cases of this series have shown a pronounced increase in blood pressure and might easily be classified as chronic hypertensive cardio-renal disease. All were, however, materially benefited by thyroidectomy. It is common to

find an elevated tension in hyperthyroidism which may frequently reach thirty points or more in well developed cases and proper removal of the gland usually reduces it appreciably. The experimental use of thyroxin is said to cause little or no variation in the blood pressure, so its increase in clinical cases is not well understood. It is indicative of the great complexity of the disease, possibly resulting as Crile⁸ has recently argued, from an associated adrenal activity. Elliott⁹ has commented at length on the cardio-renal variety of thyroid disease and estimates that in the Chicago area it is of equal importance to any of the other three major groups in the number of victims claimed. If true, it offers hope that it may be possible to check or even reduce the steady increase of heart disease, as these people can in the main be relieved and returned to active life by proper operative and perhaps other treatment.

CONCLUSIONS

The steadily increasing number of sufferers from cardiac disease includes many who have a masked hyperthyroidism as the cause. In the absence of another definite etiology no examination is complete which does not thoroughly investigate the thyroid gland and determine its relationship, if any, to the disease.

BIBLIOGRAPHY

1. Goodall, J. S., and Rogers, Lambert: The nature of thyrotoxic myocarditis. *Lancet*, March 5, 1927, 212:486.
2. Krumbhaar, E. B.: Electrocardiographic observations in toxic goiter. *Am. Jour. Med. Sci.* (February) 1918, 155:175.
3. Strauss, A. E.: Heart block, auricular flutter and adenoma of the thyroid. *Med. Clin. No. Am.* (September) 1927, 11, 2:487.
4. Phillips, J., and Anderson, J. P.: Cardiac disturbances in goiter. *Jour. Am. Med. Assn.* (October) 1927, 89:1380.
5. Kendall, E. C.: The active constituent of the thyroid. *Jour. Am. Med. Assn.* (September 14) 1918, 71:871.
6. Marine, David: The thyroid gland and its relation to diseases. *Northwest Med.* (February) 1928, 27:57.
7. Mosser, W. B.: The effect of iodine and thyroid feeding on the thyroid gland. *Surg., Gyn. and Obst.* (August) 1928, 47:168.
8. Crile, G. W.: Adrenal factor in hyperthyroidism. *Surg., Gyn. and Obst.* (March) 1929, 48:371.
9. Elliott, C. A.: Cardiac disturbances associated with hyperthyroidism. *Internat. Post. Grad. Med. Ass'n Proc.* 1927, 3:286.

PRELIMINARY HEMOSTASIS IN THYROIDECTOMY*

MARTIN NORDLAND, M.D., F.A.C.S.
Minneapolis

ONE of the most important principles of surgery is good hemostasis. This principle is particularly applicable in the surgery of the thyroid gland. To emphasize this, it is only necessary to call attention to the fact that the normal thyroid is 28 times as vascular as the head, $5\frac{1}{2}$ times as vascular as the kidney, and that the entire blood of the body passes through the gland 16 times each day. The importance of preliminary hemostasis, based on a thorough knowledge of the anatomy of the thyroid gland, is at once evident.

The history of thyroid surgery contains much evidence of the importance of effective hemostasis. In the operative cure of goiter, the fear of hemorrhage has always been the greatest single barrier to the success of the operation. As early as 1883, Kocher developed a technic for thyroidectomy, which remains relatively standard today. In 1884, he reported a series of 250 operations for goiter with a mortality of only 2.4 per cent. He was the first to realize the value of thorough preliminary hemostasis.

In 1910, de Quervain, one of Kocher's most able students, reasoned that thyroidectomy could be further simplified by the preliminary ligation of the inferior thyroid arteries. At that time, in an experimental study, he injected the fascial spaces of the neck with various colored gelatine mixtures and from his studies devised an easy and practical method of approach for the extrafascial ligation of the inferior thyroid arteries. His findings were somewhat different from those usually described by the anatomists and are as follows (Fig. 1):

1. The thyroid gland is enveloped in a thick layer of its own fibrous tissue, called the *capsule propria*.

2. The thyroid gland is surrounded by a space containing a layer of fine connective tissue and relatively large veins. This is called the thyroid space and contains on the posterior side, besides these veins, branches of the superior and inferior thyroid arteries, the parathyroid bodies and recurrent laryngeal nerves. This space is the usual

site for the ligation of the branches of the inferior thyroid arteries.

3. In front of this space is the thyroid fascia, usually referred to as the external capsule. This fascia is the posterior wall of the sternothyroid muscle and laterally forms the median boundary of the blood vessel sheath. It continues posteriorly in single lamellae to the trachea, esophagus and spinal column.

4. In front of this thyroid fascia is the small muscle space, containing the sternothyroid and sternohyoid muscles, which in turn is separated

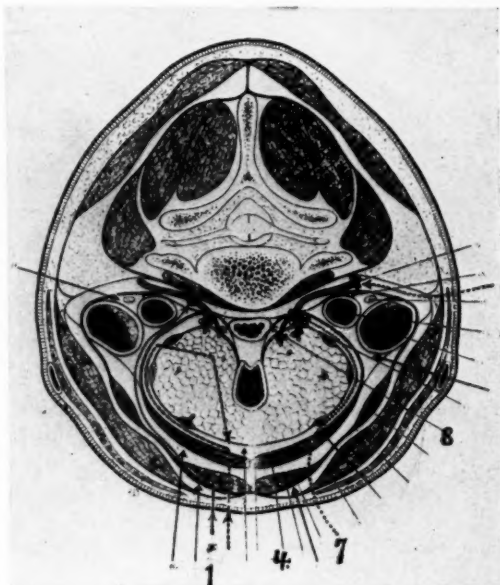


Fig. 1. Outline of the fascia and spaces in the region of the thyroid gland, showing (1) extrafascial ligation of the artery by this method; (4) external capsule; (7) usual site of ligation of inferior thyroid artery; (8) near the recurrent laryngeal nerve (8). (de Quervain.)

from the sternomastoid space by a thin fascial sheath. He further found that the inferior thyroid artery usually divides into its branches before it penetrates the external capsule and enters the thyroid space. In this space, also, the recurrent laryngeal nerves pass between the branches of the inferior thyroid artery, as shown in the accompanying figure (Fig. 2). This has been verified by Drs. Fowler and Hanson, of the Univer-

*Presented before the annual meeting of the Minnesota State Medical Association, St. Paul, May 14, 1929.

sity of Minnesota, in a study of the anatomy of the thyroid gland in more than 200 cadavers (Fig. 3).

De Quervain concluded that it would be logical to ligate the trunk of the inferior thyroid artery outside of this space and the capsule, thereby ob-

ner separated from its fine connective tissue surroundings (Fig. 1 and 6). The finger now usually touches the inferior thyroid artery, which crosses beneath and at right angles to the carotid vessels, at the level of the sixth cervical transverse process (usually marked by a small tu-

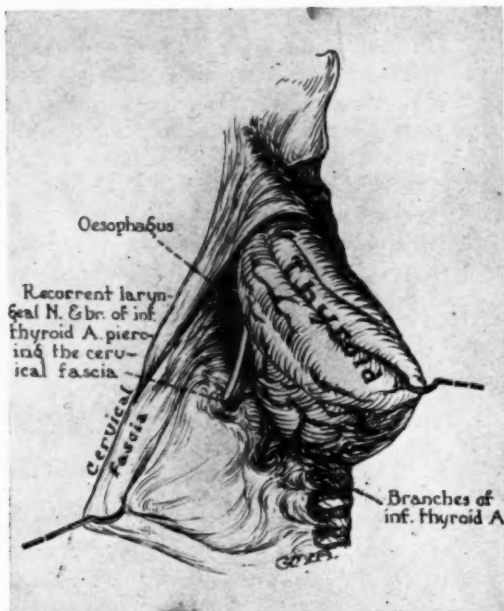


Fig. 2. Branches of inferior thyroid artery and recurrent laryngeal nerve, entering thyroid space through thyroid fascia. Usual site of ligation. (Fowler and Hanson.)

taining more certain hemostasis and avoiding the recurrent laryngeal nerve, rather than applying ligatures to the branches of this artery inside of the capsule with greater hazard to this nerve. He, therefore, adopted the following extrafascial approach to the inferior thyroid artery, which we have employed almost routinely in the last three years.

The technic of the extrafascial approach to the inferior thyroid artery is as follows: The usual collar incision is made with ligature of the small superficial veins (Fig. 4). The median border of the sternomastoid muscle is liberated and drawn outward with a blunt retractor. The fascia on the surface of the prethyroid muscles is now visible. Next, a vertical slit 3 cm. long is made in this premuscular fascia and the outer edge is pared gently back and caught up with the retractor (Fig. 5). The finger is inserted and worked in deeply in a median direction, along the mesial side of the carotid, which is in this man-

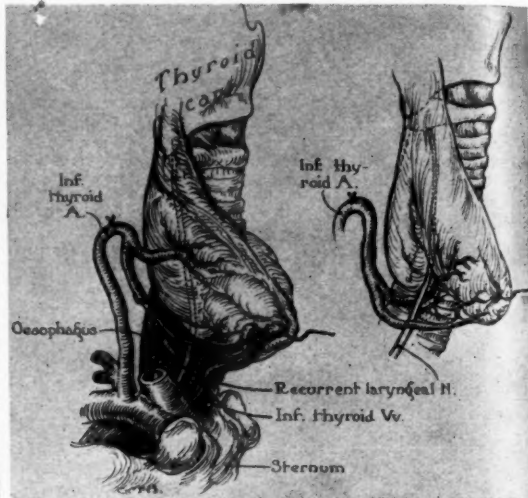


Fig. 3. Site of extrafascial ligation to trunk of inferior thyroid artery (X) and relation of branches to recurrent laryngeal nerve. (Fowler and Hanson.)

bercle). Then with the aid of two long blunt dissectors, the artery is cleaned and separated from the deep cervical fascia and a ligature is passed with a small carrier (Fig. 7). The retractors are now removed and thyroidectomy carried out by any procedure suitable to the surgeon, the capsular veins being noticeably free from blood.

The *advantages* of the preliminary extrafascial ligations of the inferior thyroid arteries are as follows:

1. It fulfills one of the first principles of surgery, that of hemostasis.
2. It lessens bleeding from the capsular veins of the thyroid, resulting in a cleaner and dryer field for the subsequent thyroidectomy.
3. Because the ligature is applied to the trunk of the artery, outside of the field of operation, rather than to its branches, hemostasis is obtained with a greater degree of accuracy and at a greater distance from the recurrent laryngeal nerve.
4. The method is particularly advantageous in attacking glands adherent, from previous operation, to surrounding structures, long continued iodization or old inflammatory processes.

5. Thyroidectomy is simplified because the ligature is applied before rather than after the luxation of the goiter. The procedure is, too, of particular advantage in intrathoracic goiter, because the circulation is thereby reduced.

measure in the surgical treatment of all goiters, but particularly the toxic goiters in this country.

Since adopting this method, we have been frequently questioned regarding the danger to the nutrition of the parathyroid with this procedure.

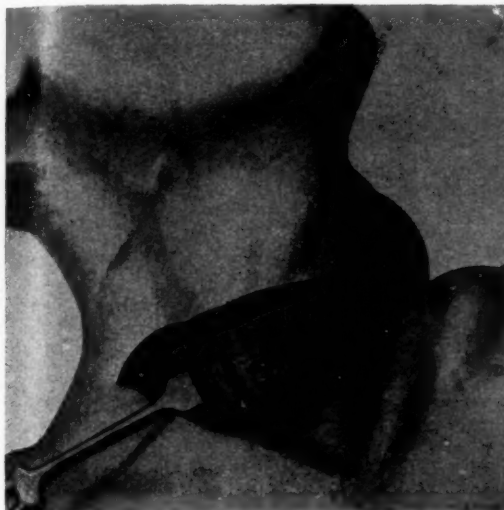


Fig. 4. Neck incision. Anterior jugular veins tied, and the aponeurotic sheath of the small muscles incised. The sternomastoid muscle is under the retractor. (de Quervain.)

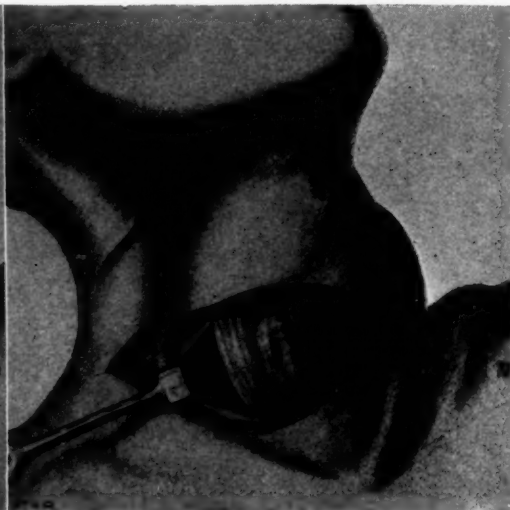


Fig. 5. The aponeurotic sheath, the small muscles and the sternomastoid are beneath the retractor: The sternohyoid and sternothyroid are exposed. The finger penetrates through the space thus made in order to find the inferior thyroid artery. (de Quervain.)

6. The application of the ligature at a distance from the thyroid gland protects rather than endangers the parathyroid bodies, as well as the recurrent laryngeal nerves.

7. In our experience with this method, used since 1926, we have noted less post-operative drainage, shorter convalescence and better scars.

COMMENT

The purpose of this paper is to introduce a safe preliminary step in thyroid surgery, advocated, employed and proved practical by de Quervain in his goiter clinic since 1911. It is further the purpose to demonstrate that this method is just as logical in the operative treatment of goiter in his country as in Switzerland.

Mastin, at the Mayo Clinic, as well as Hertzler and Reinhoff, all three of this country, agree that the inferior thyroid artery is uniformly larger by one-third than the superior thyroid artery, in both normal and diseased glands.

Since this is a simple and easy method, we believe it is a practical procedure as a preliminary

It has been proved, both experimentally and clinically, that the conservation of the parathyroid glands by this method is no longer theoretical. Experimentally, Pettenkofer, Enderlin and Hotz have demonstrated by injections into the ascending aorta in cadavers, that even after the ligation of all four arteries at their points of origin, good injection of the thyroid vessels occurs. Hence, we see that the blood supply of the parathyroids is not interfered with. Wangenstein, recently, in an excellent review of the literature, relative to the blood supply of the thyroid gland, finds ample proof of this fact.

Clinically, de Quervain proved the method both safe and practical, when in 1922 he reported the ligation of both the inferior thyroid arteries in 815 cases, both the inferiors and one or more of the superiors in 611 cases, and all four arteries in twenty-two cases, without the development of a single case of tetany. Enderlin and Hotz confirmed these results by similar clinical applications of this method, in a large number of cases. Since 1926, we have employed this technic in a



Fig. 6. Course and relations of inferior thyroid artery. Ligature applied by this method to inferior thyroid artery as it emerges just mesial to common carotid. (Fowler and Hanson.)

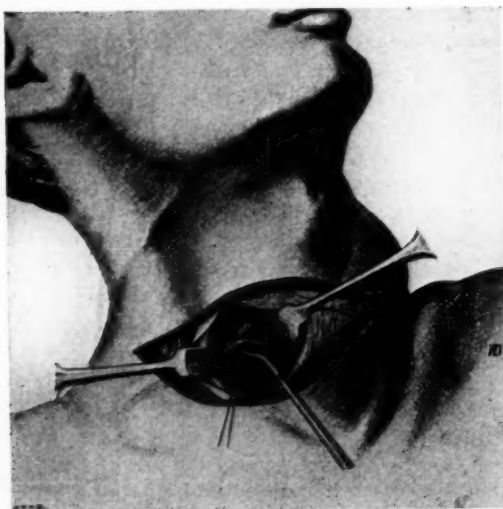


Fig. 7. Exposure and ligature of the inferior thyroid artery. The carotid artery, superficial aponeurotic sheath of the small muscles, and the sternomastoid muscle are under the external retractor. The goiter covered by the sternohyoid and sternothyroid muscles are under the internal retractor. The carotid is really covered more than the illustration indicates by the prolongation of the sheath of the small muscles. (de Quervain.)

total of 126 cases, and no case of tetany has been observed.

SUMMARY OF LIGATIONS OF THYROID ARTERIES IN 186 CASES

Number of Ligatures	1	2	3	4
Number of Cases	12	72	97	5
Percentage	8.5	38	51	2.5

SUMMARY

1. Preliminary ligation of the inferior thyroid arteries in goiter surgery makes a neat, clean and practical operation.

2. Thyroidectomy becomes a safe procedure with this method, because of better protection to the laryngeal nerves and the parathyroids.

3. Preliminary ligation of the inferior thyroid arteries has proved to be a good method of attack:

(a) In densely iodized goiters because it is outside of the field of operation.

(b) On recurrent toxic goiters when this procedure was not performed at the original operation.

4. This method gives better hemostasis because ligation is performed before division of the artery takes place and because the inferior artery is normally one-third larger than the superior and furnishes the main blood supply to the gland.

5. The danger of post-operative hemorrhage is reduced to a minimum.

6. Since fewer catgut ties are necessary within the gland, and, because the operative field is more dry, there is consequently less post-operative drainage, a more rapid convalescence, a better scar and a greater chance of permanent cure.

BIBLIOGRAPHY

- de Quervain, Fritz: Preliminary hemostasis in goiter operations. *Surg., Gyn. and Obs.*, 1916, 33:402.
 de Quervain, Fritz: Goiter and thyroid diseases. Wm. Wood, New York, 1924.
 Deaver, J. B.: Surgical anatomy. Blakeston, Phil., 1926, 2:568.
 Enderlin, E., und Hotz, G.: Beitrage zur Anatomie der Struma und zur Kropfoperation. *Ztschr. f. ang. Anat.*, 1918, 3:57.
 Fowler and Hanson: Anatomy of the thyroid gland. Read before the Henn. Co. Med. Soc. Dec. 3, 1928.
 Giordano, A. S., and Caylor, H. D.: Histological study

- of the effect of ligations of the thyroid vessels in exophthalmic goiter. *Surg., Gyn. and Obst.*, Jan. 1923, 36:75.
- Halsted, W. S.: The operative story of goiter. *Johns Hopkins Hosp. Rep.*, 1920, 19:72.
- Hertzler, A. E.: *Diseases of the thyroid gland*. C. V. Mosby Co., St. Louis, 1929, p. 243.
- Mastin, E. V.: The blood supply of the thyroid gland and its surgical significance. *Surg., Gyn. and Obst.*, 1923, 36:69.
- Mayo, C. H., and Pemberton, J. deJ.: Surgery of the thyroid and its morbidity. *Trans. Amer. Surg. Assn.*, 1923, 41:112.
- Pettenkofer: Beitrag zur operativen Behandlung zweiseitiger Strumen. *Beitr. z. klin. Chir.*, 1914, 93:275.
- Wangensteen: The blood supply of the thyroid gland. *Surg., Gyn. and Obs.*, May, 1929, 48:613.
- Wilson, L. B.: Experimental lesions in the cervical sympathetic ganglia in relation to exophthalmic goiter. *Am. Jour. Med. Sci.*, 1918, 155:553.

THE UNITED STATES PHARMACOPEIA

The United States Pharmacopeia is published by authority of the United States Pharmacopeial Convention. This body meets once every ten years, and its chief function is the selection of the Committee of Revision of the United States Pharmacopeia. To this committee is assigned the task of issuing the revised edition of the book. The next Pharmacopeial Convention has been called for May 13, 1930, at which time the delegates appointed by the constituent bodies will meet and inaugurate the preparation of the eleventh revision of the Pharmacopeia. At the time when instruction in medical schools in subjects related to therapy and drugs was woefully deficient, and when conditions made necessary the establishment by the American Medical Association of its Council on Pharmacy and Chemistry, the Pharmacopeia promised to degenerate into a mere book of standards for drug control officers. In 1916, when the ninth revision of the Pharmacopeia made its appear-

ance it was pointed out that it was a book of standards for drugs but not a book of standard remedies. Largely as a result of the renewed interest in scientific drug therapy which was created by the Council on Pharmacy and Chemistry, there was so much interest taken in the following revision of the Pharmacopeia that, at the convention held in 1920, the medical members of the revision committee were in effect delegated to decide which of the drugs in the ninth revision were to be retained in the tenth and which were to be omitted as being of insufficient usefulness, and as a result the tenth revision is a book with which physicians and pharmacists may justly be satisfied. In order that the next revision may correctly reflect the advances in drug therapy, the medical and other bodies entitled to send delegates to the coming convention should give serious consideration to the appeal of the Council on Pharmacy and Chemistry that competent delegates be sent to this convention. (*Jour. A. M. A.*, September 28, 1929, p. 990.)

THE EXOPHTHALMOS OF GRAVES' DISEASE*

FRANK E. BURCH, M.D.
Saint Paul

THE syndrome known as Graves' disease or exophthalmic goiter was described by Brams as an endocrine and nervous dysfunction, not necessarily accompanied by exophthalmos nor by thyroid enlargement. In his studies of the relationship of exophthalmos to goiter, the incidence of exophthalmos of moderate, marked or extreme degree was approximately 49 per cent. It occurred unequally in twenty-five, and unilaterally in thirty-five patients. Brams¹ found these features unrelated to asymmetry of the thyroid lobes. Age did not affect the incidence and the exophthalmos rarely preceded goiter symptoms. The degree of exophthalmos bore little relationship to the severity of the disease, though it was found to vary in degree without variation in other symptoms. It is the last symptom to disappear after all others are relieved by appropriate measures, and it may not be expected to disappear when it has persisted for a long period. Halloway² and associates also found exophthalmos present in practically 50 per cent of toxic hyperplastic goiters. It was almost never observed in either toxic or non-toxic adenomatous types. His observations were made by inspection verified by exophthalmometer measurement. Few will hold with Claiborne³ that exophthalmos is a first and basal sign of exophthalmic goiter or that the great majority of other signs follow this sequentially, in view of collected evidence to the contrary.

The eye presents many other dramatic and striking signs and symptoms associated with Graves' syndrome. Practically all eye signs have acquired the names of the observers who first described them, and may be briefly stated as follows:

OCULAR SIGNS OF GRAVES' SYNDROME

Parry: Exophthalmos

Dalrymple: Peculiar stare. Retraction of upper eyelid.

Von Graefe: Tardy downward movement of the lid, when rotating eyeballs downward.

Stellwag: Diminished winking frequency. Imperfect lid closure with winking.

Mobius: Imperfect power of convergence.

Jellinek: Pigmentation of eyelids. Edema.

Gifford: Difficulty in eversion of upper eyelid.

Sukers: Visual fixation from extreme lateral rotation.

Wilder: Jerking or twitching of globe when moving eye from extreme abduction to adduction.

Kocher: Movement of upper lid upward leaving eyeball behind, when gaze is directed to upward moving object.

Joffroy: Absence of brow wrinkling when looking upward, with the head downward.

Rosenbach: Fibrillary tremor of closed eyelids.

In addition to these we may have nystagmic tremor of the globe, paresis of extraocular muscles, occasional orbital bruit, pulsation of the retinal arteries, and inconstant changes in the field of vision. Even when exophthalmos is absent, the Dalrymple stare, Graefe's, Joffroy's or any other sign may be present with any of the types of goiter. Many of them accompany or precede, but are not the result of, exophthalmos. Halloway observed Graefe's sign present in 90 per cent with, and in 67 per cent without, exophthalmos; but it was also noted in 68 per cent of toxic and in 35 per cent of non-toxic adenomas. The Dalrymple stare occurred in 65 per cent of patients with, and in only 25 per cent without, exophthalmos in the toxic hyperplastic group; it was present in 13.6 per cent of cases classed as toxic and 19.5 per cent of non-toxic adenomas. Edema of the lids was observed in toxic and non-toxic adenomatous patients almost as frequently as in those of the toxic hyperplastic group.

One may observe quite complete eye symptoms usually associated with goiter without other clinical signs of thyroid disease.

Case 1.—Mrs. O. H. P. came to me Sept. 10, 1925, for explanation of moderate exophthalmos of a few months development. Dalrymple's stare with very marked upper lid retraction; the Graefe's, Kocher's, Mobius' and Stellwag's signs were all present. There was noticeable difficulty in rotating the eyes upward,

*Presented before the annual meeting of the Minnesota State Medical Association, St. Paul, May, 1929.

but no demonstrable paresis of the superior recti. There was less exophthalmos when the lids were closed, but it was increased when the eyelids were open. The exophthalmos became sufficient to require night bandaging. She was quite nervous but this had apparently developed after the exophthalmos, which had caused much insomnia. Dr. Frederick Mitchell and Dr. James B. Gilfillan could find no clinical or physical nor sufficient laboratory evidence for a diagnosis of exophthalmic goiter. After four years the eyes are only slightly changed, but she has developed a left convergent squint. She has developed none of the classical symptoms of exophthalmic goiter.

Zeeman⁴ records a similar case of Graves' eye syndrome with a normal basal metabolism (by two tests) without tremor, or tachycardia, but with some nervousness. MacCallan⁵ recorded a somewhat similar case with extreme exophthalmos, in which the autopsy revealed a thickened pia-arachnoid which interfered with return flow of lymph from the orbit. A history of cerebrospinal fever some years previously afforded a probable explanation for the condition.

How may this clinical picture solely of the eye symptoms be explained? When associated with other goiter symptoms, undoubtedly some of the eye symptoms, particularly those affecting the lids, may be attributed quite logically to the effect of irritation of the cervical sympathetic, and resulting stimulation of the unstriped, lid-retracting muscle of Muller. Others might be explained on an ataxic or asthenic basis or simply by nervous dysfunction. In my patient there were no other toxic goiter symptoms and it is difficult to explain the condition without assuming some other infectious source of toxic irritation of the sympathetic ganglia than one produced by the thyroid gland. This hypothesis indirectly gains some support from the report of L. B. Wilson,⁶ who was able to experimentally produce lesions in the cervical sympathetic in goats by electric stimulation and by bacterial inoculation. He concluded "it would appear that irritation from the presence of certain bacteria within the cervical sympathetic ganglion of the goat, may produce histologic pictures within the ganglion, and also the thyroid, which parallel those found in various stages of goiter. The evidence supports the suggestion that the thyroid receives its stimulation to overfunction through its nerve supply, and as a result usually of a local infection in the cervical sympathetic ganglion." It is conceivable that the eye might likewise become involved without thyroid involvement. Perhaps we reason in-

correctly when we assume the sympathetic irritation follows thyrotoxicosis. Do we actually know the relationship between the function of the thyroid and its control by the sympathetic? May not the eye symptoms, along with all other symptoms accompanying dysfunction of the thy-

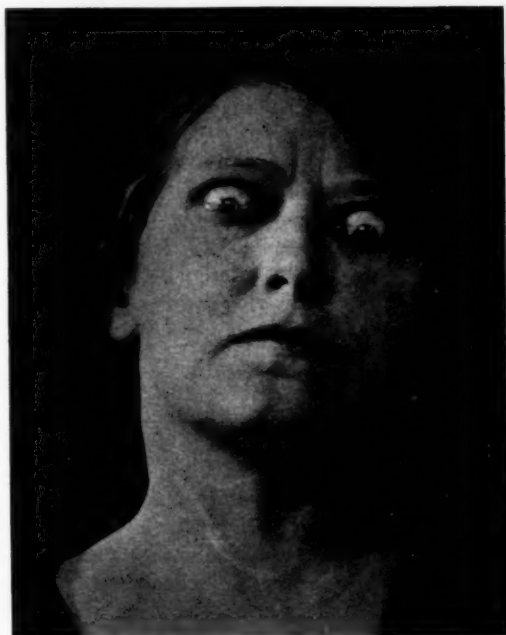


Fig. 1, Case 1. Von Graefe's sign.

roid, be primarily due to some factor which also disturbs sympathetic control of the endocrine system without the thyrotoxic medium?

A certain degree of variation in exophthalmos may occur with abnormal dimensions of the globe, with asymmetry or variation in orbital and skull dimensions, with the age, race, etc., of the individual; also physiologically with many other factors. The position of the eyeball is ordinarily such that the summit of the cornea lies just within a vertical plane touching the superior and inferior orbital margins. Practically all post-mortem examinations of exophthalmic cases have revealed excess of orbital fat, and abnormal edema of the fatty tissues of the orbit with more or less infiltration. Edema of the orbital tissue is explained on the ground of a vasomotor disturbance which in turn is attributed to the influence of the sympathetics. H. Foster Moore⁷ in dissecting out excessive fat in a case which threatened serious consequences, found the mus-

cles greatly swollen, with fusiform bellies, apparently from edematous infiltration, as thick as the last little finger joint. Carl Fisher⁸ noted in sections of the recti removed from goiter cases that there was true parenchymatous degeneration of muscles, not simply atrophy, and the orbits were full of fat. Many explanations have been offered for the mechanism producing exophthalmos. Basedow himself looked upon the protrusion of the bulb as a result of strumous hypertrophy of the cellular tissue within the orbit even though patients were much emaciated.

Tilley⁹ believes exophthalmos is produced through the mechanism of the widened palpebral fissure incident to the Dalrymple stare. By actual measurement he found little forward protrusion of the globe until the palpebral fissure exceeded its normal width; that exophthalmos is much less during sleep and becomes greatest after lids have passed the limits of normal palpebral fissure opening. It is suggestive that the normal orbital tissue tension causes extrusion of the globe when the lids cease to exercise their restraining functions. Furthermore, to quote him, "it is obvious that this explanation would of necessity assume an increase in retrobulbar tissue to occupy the space and maintain the tissue tension resulting from anterior movement of the eyeball." Thus he reasons "increase in retrobulbar tissue is due to the anterior dislocation of the eyeball rather than the cause of it."

Landstrom¹⁰ described an involuntary muscle passing from peribulbar attachment into the eyelids which he considered to be the cause of the exophthalmos of goiter. This has also been demonstrated by Hesser, but many anatomists seem unable to find it. Even though innervated and influenced to overaction through stimulation of the sympathetics, as Carl Fisher says, "it is mechanically impossible even if the unstriped muscle were strong enough to overcome the force of the recti."

Treacher Collins¹¹ held the view that Muller's orbital muscle (which bridges the sphenomaxillary fissure and which is well developed in lower animals) is responsible for exophthalmos because it is innervated by the sympathetic, and would tend to increase in power from prolonged stimulation, in cases of long standing. In lower animals it is often spoken of as the "protrusor bulbi," and undoubtedly does serve to protrude the globe, but in man it is a poorly developed

vestigial structure. One is not able to find in the literature any definite autopsy proof of hypertrophy of this structure. Anatomically it exists beyond doubt and although Krauss and Frund¹² contend that contraction of this muscle would influence the venous circulation by compression of the ophthalmic vein, thereby accounting for the exophthalmos seen with goiter, Whitnall¹³ rejects this theory on the basis of "free anastomosis between the veins of the orbit and those of the face would obviate the questionable engorgement that neither the effect of compression of the venules traversing it, nor protrusion of the orbital contents could be much affected," by a muscle so thin as he found it. Also J. H. Fisher, in discussing Collins' theory, argues that if irritation of the sympathetic produces exophthalmos through any action of the sphenomaxillary muscle of Muller, we should get *enophthalmos*, as one of the signs of paralysis of the cervical sympathetic nerves producing loss of tonicity in that muscle. He did not so find it when paralysis of the cervical sympathetic nerves occurred.

Another explanation was offered by O'Day,¹⁴ who found postmortem varicose orbital veins associated with infiltration and edema of the orbital fat. His theory of the mechanism of exophthalmos is based partly on the fact that it usually occurs as a late symptom with hyperthyroidism, associated with prolonged and violent tachycardia; that there results inability of the ventricles to fill, with engorgement of the whole venous system and consequent stasis of the cavernous sinuses into which the orbital veins empty; this venous engorgement (in his case amounting to varicosity) produces the orbital edema causing exophthalmos. While this mechanism might account for the edema of the orbit found in certain cases, it affords no explanation when tachycardia is absent. Bulson¹⁵ questions, if exophthalmos is due entirely to venous congestion, why there is no more evidence of congestion in the nasal, frontal, and supraorbital veins, communicating with the ophthalmic veins, or evidence of venous stasis of the retinal veins, which there is not.

The theory of vasomotor dysfunction caused by thyrotoxic influence upon the sympathetic nervous control with localized arterial dilation as a cause of exophthalmos is one most difficult to prove. The uncertain results which have followed the operation of Jaboulay,¹⁶ and extensive-

ly practised by him, Jonnesco, Balescu, and by C. H. Mayo¹⁷ for a time, in which the removal of the superior cervical ganglion, or removal of both superior and middle ganglia and intervening strand, have been of little help in the control of bulbar protrusion. The operation is now very rarely done. According to DeSchweinitz,¹⁸ "the sympathetic nerve displays its effect on the eyeball in two different ways—by contraction of the unstriated muscles of the orbit, Muller's muscles, and by vasomotor influence. If Muller's muscle contracts there is protrusion, but if there is contraction of the orbital vessels then there is sinking in: predominance of the one influence will cause exophthalmos, predominance of the other, enophthalmos." Unverricht could not attribute exophthalmos to irritation of the sympathetic in view of experiments conducted by him upon living patients by faradism and pinching of the nerves, and because of the negative results following resection of the sympathetic by Kocher and Garre. He quotes Goldscheider's opinion that exophthalmos is due to infiltration of plasma into the retrobulbar tissues, through venous congestion or toxic vascular paralysis.

It seems most reasonable therefore to limit the theories in explanation of exophthalmos with goiter to a combination of factors based on the somewhat limited pathological and clinical findings. Tilley's contention of the restraining influence of the lids with proptosis following retraction of the lid, seems reasonable. Stasis of the venous circulation and resulting edema of the orbital tissues therefrom is definitely proved. The vasomotor influence of the sympathetic is undoubted. The hypertrophic degenerative changes in the ocular muscles probably result from long continued congestion and spasticity. The fact that exophthalmos does not recede after death in long-standing cases and remains as a residual symptom after successful thyroidectomy, is what one would naturally expect from hyperplasia.

Exophthalmos becomes serious from a clinical viewpoint when so extreme that the cornea becomes involved from imperfect lid closure. The lessened corneal reflex, infrequent winking, the insensibility of the cornea from exposure, together with the probable trophic influence due to stasis and protrusion, may give rise to most serious consequences. In certain cases corneal anesthesia becomes quite marked. The loss of eye-

sight or of the eyes themselves through the influence of exophthalmos is by no means rare. Sattler²⁰ collected seventy-four cases in which one or both eyes were lost as a result of exophthalmos. In the majority of these the right eye was first affected. Von Graefe²¹ reported three cases, and collected twenty-two others in which eyes were lost from extreme protrusion with corneal ulceration. All observers comment on the difficulty in extreme exophthalmos of controlling the keratitis by local measures sufficient to stay the process and prevent destruction of the eyeball. Many reports seem to point to some influence of trophic as well as purely mechanical factors and that the pure element of infection is not the chief contention. At times the exophthalmos seems to assume an unusual malignancy demanding superlative surgical skill, often with ineffectual results. Saenger and Baer²² reported a case of acute malignant exophthalmos involving both eyes with keratitis, not controlled by tarsorrhaphy, thyroidectomy, and extirpation of both cervical sympathetics. The pathological examination showed peculiar brawniness of the orbital fat (lipodystrophy) with dilated blood vessels and lymphocytic infiltration. Juler²³ has reported a case in which one eye was lost notwithstanding canthotomy, repeated tarsorrhaphy, and orbital incisions. The second eye was saved only after repeated lid operations, conjunctivoplasty, excision of the sympathetic ganglion and x-ray treatment of the goiter. Cross, Coulter,²⁴ Thompson, Paton,²⁵ and many others have reported similar experiences; some of these have occurred after thyroidectomy had successfully relieved all other symptoms.

Without much enthusiasm, I wish to report a case which proved to be malignant exophthalmos eighteen months following complete relief of all goiter symptoms by thyroidectomy, in the hope that the suggestions which follow may be of value to others.

Case 2.—Mr. A. H., aged 62, was referred by Drs. Gelz and Wenner of St. Cloud on June 20, 1928, on account of marked exophthalmos of the right eye noticed six weeks previously, with slight diplopia, with edema of the upper left eyelid. A Kronlein exploration at St. Raphael's Hospital, St. Cloud, May 26, 1928, had revealed no definite tumor. The tissue removed was pathologically reported as "simply fatty tissue." When admitted to the Miller Hospital, St. Paul, there was exophthalmos of the right eye of 7 mm., vision was reduced to 3/200, and conjunctiva was edematous and protruded beyond the lids; there was moderate

ciliary congestion. The lids were retracted and would not close over the cornea, the upper lid being very edematous and boggy, especially near the inner angle. The intraocular tension was normal, the pupillary reaction normal, the field of vision contracted in the temporal field uniformly to about 30. No definite mass in the orbit could be detected on palpation. Corneal anesthesia was present, which, with trophic changes,

complete. Excepting pneumonia twenty years previously and complaint of indefinite digestive disturbance his medical history was essentially negative. His habits had been exemplary. His wife had died from complications attending exophthalmic goiter.

On admission here for his eye trouble, the physical examination showed a well built man weighing 170 lbs., with no evidence of any organic diseases. The goiter

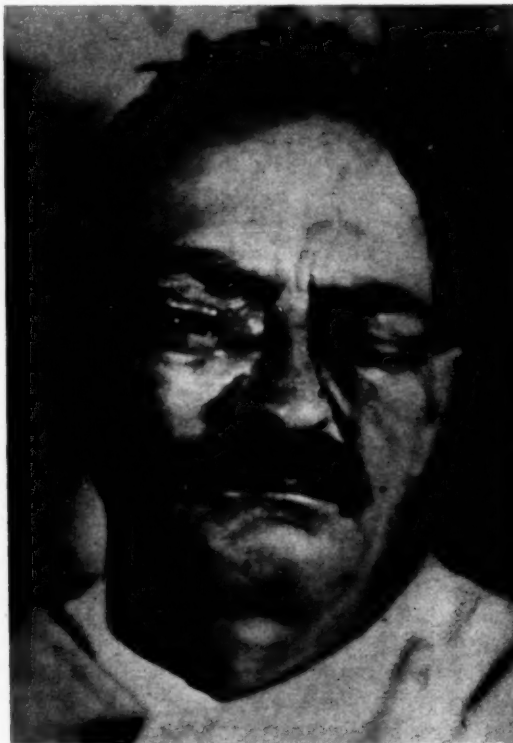


Fig. 2, Case 2. Edema of the eyelids.



Fig. 3, Case 2. Staphyloma following corneal ulcerations.

was probably an important factor in subsequent serious complications. For a few weeks there was no appreciable exophthalmos of the left globe and excepting slight edema of the upper lid the left eye was normal and vision was 20/25. In neither eye could any abnormal fundus changes be observed. The optic discs were normal. Possibly one might remark that the veins were slightly overfilled in each eye.

Through the courtesy of Dr. H. P. Wagener, of the Mayo Clinic, I was given the earlier history of this case. Mr. H. was a patient at The Mayo Clinic in December, 1926, complaining of palpitation, dyspnea, nervousness, and tremor, weakness and epigastric distress. He had the stare and von Graefe sign but no definite exophthalmos. His B.M.R. upon two tests was +20 and +34. A subtotal thyroidectomy (substernal thyroid) was done. The pathological diagnosis was hypertrophic parenchymatous thyroid. His convalescence was uneventful. Mr. H. stated that his recovery was

had not recurred; the blood pressure was 110/65, pulse 60 to 70, temp. normal, blood count, rbc. 5,340,000, white 7,000, Hb. 90, Polym. 65 per cent, Lymph. 32 per cent, Eosin. 3 per cent, Wassermann negative, urine negative. Because of his general distress the B.M.R. was not tested. Dr. C. E. Connor found no evidence of any sinus disease. The x-ray skull pictures showed only slightly increased density of the right orbit and sinus areas. Drs. J. B. Gilfillan and H. B. Zimmermann, who saw Mr. H. in consultation, could find no evidence to support a diagnosis other than tumor or some interference with the orbital circulation producing stasis. The ophthalmic clinical picture was not unlike that seen in cavernous sinus thrombosis. After ten days of local treatment with White's ointment, to protect the cornea, and warm astringent compresses, with salicylate of sodium, grs. XX given intravenously daily, the patient returned to his home for further observation and treatment. A tentative diagnosis of orbital sarcoma or

orbital metastasis was made, although there was no strong support for either diagnosis, in the orbital or in the general physical examination. One was impressed with the suggestion of edema of the orbit by the boggy appearance of the lids, the venous stasis, chemosis and prolapse of conjunctiva, and the limitation in excursions of the globe.

In view of the negative exploratory findings by the earlier Kronlein operation very competently done, one hesitated to explore the orbit, and only the palliative measures mentioned were continued awaiting further evidence. His discomfort increased with greater exophthalmos which, after a few weeks, became evident also in the left eye. Based upon the excellent reports by Pfahler on *x*-ray therapy of orbital sarcoma, and also because of its possible influence on the fat tissue of the orbits, he was given deep *x*-ray treatment by Dr. Frank S. Bissell on July 16, 1928, to the right orbit; July 24 and August 20, to both orbits; and finally on September 13, to the left orbit. Each treatment resulted in *x*-ray sickness of a moderate degree, but had no effect upon the extreme proptosis. Because of threatening damage to the cornea, Mr. H. was readmitted to the Hospital on Aug. 3, 1928. Superficial infiltration of the right cornea had developed over its lower third, with ulceration just above the lower limbus over an area about 2X5 mm. Tarsorrhaphy was done and the condition temporarily controlled. However, the stitches pulled out after ten days, without lid adhesion and a Buller shield was then used, continuing local measures. The left fundus was unchanged, but the proptosis in the left eye had definitely increased. Both eyes were now treated with antiseptic ointment continuously, and a double Buller mask employed, this apparently affording sufficient protection and giving least discomfort. Infiltration and ulceration of the right cornea continued to increase and the lids were again sutured. The right eyeball finally perforated with intense pain, controlled by anodynes for a time. On September 15, obtaining consent to enucleate and to exenterate if necessary, tarsorrhaphy was done on the left eyelids, and the right eye was enucleated. Upon removal of the eye, definite irregular hard masses could be felt through the orbit to its apex, especially along the superior and internal recti, of the nature of which one could not be certain, and the orbit was exenterated.

The orbital tissues were submitted to Dr. M. Warwick, Dr. E. T. Bell, and later to Dr. Geo. T. Caldwell, whose report in brief follows: The eyeball has burst and is collapsed. Back of the eyeball surrounding it and attached to it are muscles which are greatly enlarged in size averaging from 1 to 3 cm. in thickness. No definite tumor mass can be made out: there is only degeneration of the immensely enlarged muscles, edematous fatty tissue infiltrated with lymphocytes, without evidence of any malignant process or of any tumor formation. One section consists of orbital fatty areolar and fibrous connective tissues. These tissues are unchanged except for the alterations produced in removal. The other section consists chiefly of a cross section of one of the ocular muscles. The muscle as seen grossly in the section is 9.5 mm. in diameter. At

least ten small bluish areas are visible to the naked eye, situated mostly near the periphery of the muscle, and of pin-point size. Microscopically, one-half of the muscle is divided by coarse fibrous bands into bundles of varying sizes. Some of these are subdivided by narrow bands into smaller groups, while elsewhere each remaining muscle fiber is surrounded by a loose fibrous tissue, evidently mature, but with relatively fine intercellular fibers. The fibers so surrounded are in various stages of atrophy; some are shrunken to less than one-half of the original diameter leaving a clear space surrounding each shrunken muscle fiber. A few fibers have apparently disappeared leaving the areolar structure of the endomysium. The bluish areas visible grossly consist of dense accumulations of lymphoid cells and plasma cells. The compact masses are chiefly lymphoid cells and they are situated more in the less involved portion of the muscle. They surround a few of the muscle fibers. There fibers are small and atrophic while many of the surrounding fibers of the fasciculus are granular. Plasma cells are present in small numbers with lymphoid cells, and in addition form less compact masses in the fibrous tissue, or are scattered in the fibrous stroma about the smaller blood vessels. The nerve bundles which are incorporated in the section of muscle appear normal except for a few lymphoid and plasma cells in the surrounding fibrous and fatty tissues. There is relatively little invasion of the muscle tissue by fatty areolar tissue. The areolar structure is apparently due chiefly to the loss of muscle fiber leaving the endomysium intact together with the formation of new fibrous tissue having delicate intercellular fibers. Muscle atrophy with a low grade inflammatory reaction and formation of fibrous tissue are the outstanding changes noted, which warrants the diagnosis of Pseudo-hypertrophic Muscular Atrophy, with edema of orbital fat.

The sutures in the left eyelids held only one day and the subsequent history was very much like that of the right eye, with increasing corneal infiltration and loss of sight; there was little suppuration present, but the ulcer continued to extend notwithstanding faithful treatment, until a staphyloma developed and perforation occurred. Conjunctivoplasty was not done because it was believed that sutures would not hold sufficiently to protect the cornea. Under similar circumstances again, however, this would be attempted together with free horizontal incision of the lids at the orbital margins, repeated tarsorrhaphy, and liberal resection of the orbital fat. September 27, 1928, the left eye was eviscerated for relief of the intense pain. Even after this was done, and after taking Lugol's solution for several weeks, there was no great diminution of the exophthalmos after six months. There still remained some edema and protrusion of the conjunctiva with separation of the palpebral fissure although the lids could be closed. There had been no change in the physical condition. His B.M.R. on May 2, 1929, was minus eleven. This patient from mysterious causes, because of acute exophthalmos, developing eighteen months after subtotal thyroidectomy for toxic goiter, lost both eyes.

This case of delayed exophthalmos following successful thyroidectomy is not without precedent. Leo P. Zimmerman²⁶ recently reported eleven cases in which exophthalmos developed or became worse following thyroidectomy for relief of exophthalmic goiter. In a personal communication he writes, "In every instance, the patients were completely freed from all manifestations of thyrotoxicosis, and the basal metabolic rate was normal or below normal in every case. In fact, the almost regular association of hyperthyroidism with this phenomenon made us suspect a possible relationship. The exophthalmos was unilateral in part of the patients and bilateral in the rest. While in no case did the condition result in loss of the eye, in several of the patients there was considerable conjunctivitis, chemosis, epiphora, and blurring of vision. In one nineteen year old girl, who had had no exophthalmos at the time of operation, proptosis subsequently developed to a degree that permitted the upper lid to retract behind the eyeball. We were unable to ascribe a cause for the phenomenon, nor were we successful therapeutically in correcting the changes. Following the suggestion of Plummer, we have been treating them with full doses of thyroid substance and iodine, without, however, any striking results. Some of the patients seemed to respond somewhat to iodine medication. I am convinced that the occurrence of post-operative exophthalmos is not uncommon. Since reading this paper, I have been told of at least ten other cases observed in the practices of my acquaintances. Dr. A. J. Carlson suggested that the thyroidectomy had nothing whatever to do with the development of the eye changes; that they were probably dependent upon factors other than the thyroid gland; and that they would have developed whether the thyroid had been removed or not. This, of course, brings up consideration of the etiology of hyperthyroidism which I am unprepared to go into. Benedict²⁷ mentions six cases coming to his attention with increase in exophthalmos after thyroidectomy, with loss of one or both eyes.

Hensen²⁸ reports a case in which no cause was found for progressive exophthalmos, the patient dying of cardiac insufficiency. There were no evidences of Basedow's disease. The B.M.R. was not tested. Pathologically "the orbital adipose tissue and the ocular muscles at both sides were unusually rigid and difficult to cut

with scissors." "The muscles showed a cicatrous surface on cross section. The large muscle fibers were replaced by indurated connective tissue in which were found generous infiltrations of small cells at the edges of which were numerous plasma cells. Microscopically, therefore, it was a matter of permeation of the entire orbital tissues, particularly the musculature, with lymphocytes and plasma cells." The cause of the orbital infiltration Hensen could not determine, but attributed it to inflammatory metastasis from some remote focus, possibly in the gastro-intestinal tract. Pathologically his case much resembled the findings in my own.

DeRuyter²⁹ under the title "Eine neue Art von Exophthalmos" reported a quite similar case of malignant double exophthalmos. There were none of the usual clinical signs of associated goiter dysfunction and this was excluded although the B.M.R. was not tested. Stimulation of the sympathetic was ruled out because of absence of dilated pupils. Every conceivable cause was considered but none was found to explain the persistent exophthalmos. The subsequent history is not given.

Edgar S. Thompson³⁰ believes the intractable low-grade superficial keratitis sometimes accompanying exophthalmos is due to interference with the circulation at the apex of the orbit, to which is added desiccation and infection when the cornea is no longer well covered by the lids. To this is added circulatory stasis and the effect of unnatural lid pressure. He regards sudden exophthalmos as much more dangerous than slow protrusion. The sudden onset of edema of the orbit, especially following a thyroidectomy, would seem to be accounted for by some extreme influence in the cervical sympathetics. When it occurs it demands heroic surgical measures. These measures are canthotomy, tarsorrhaphy, removal of orbital fat, section through the skin of the base of the lids as suggested by Harmon, and protection of the cornea by conjunctivoplasty. In extreme cases one may completely divide the muscle of Muller at its attachment to the upper tarsal border or even to decompression of the orbit by removal of the temporal orbital wall as suggested by Kuhnt.³¹ He states that he did not employ this latter measure until the destruction of the cornea actually threatened, inasmuch as this measure deprives the eye permanently of

important protection and might impair function of the external muscle.

SUMMARY

In this article the author reviews some of the eye signs of exophthalmic goiter and the theories for the occurrence of exophthalmos. A case is mentioned in which ocular symptoms occurred without other signs of goiter; also a remarkable case in which both eyes were lost from exophthalmos eighteen months following successful operation for goiter without any eye symptoms at the time of operation or during the interval.

BIBLIOGRAPHY

1. Brams: *Am. Jour. Ophth.*, 1922, 609.
2. Halloway: *Jour. Am. Med. Assn.*, 1929, 23.
3. Claiborne: *Ophth. Sec., Am. Med. Assoc.*, 1920, 56.
4. Zeeman: *Am. Jour. Ophth.*, 1929, 143.
5. MacCallan: *Lancet*, 1922, 1066.
6. Wilson: *Am. Jour. Med. Sci.*, 156:553.
7. Moore: *Lancet*, 1920, 701.
8. Fisher, C.: *Trans. Am. Ophth. Soc.*, 1921, 129.
9. Tilley: *Ann. Surg.*, 1920, 647.
10. Landstrom: *Jahres Bericht f. Ophth.*, 1907, 472.
11. Collins: Bowman Lecture, *Tr. Ophth. Soc. U. Kingdom*, 1921.
12. Krause and Frund: *Abst. Zeitsch. f. Augenh.*, 1912.
13. Whitnall: *Anatomy of the orbit*, 1921, 296.
14. O'Day: *New York Med. Jour.*, 1920, 709.
15. Bulson: *Ophth. Sec., Am. Med. Assoc.*, 1920, 57.
16. Jaboulay: *Lyon Medical*, 1911, 501.
17. Mayo, C. H.: *Jour. Am. Med. Assn.*, 1914.
18. DeSchweinitz: *Relation of cervical sympathetic to the eye*, 1904, 25 and 41.
19. Uverricht: *Berlin Klin. Wchnschr.*, 1925, 878.
20. Sattler: *G. S. Handbuch*, 132.
21. Von Graefe: *Berlin Klin. Wchnschr.*, 1867, 319.
22. Saenger and Baer: *Erganzungsband zur Neurologie des Auges*, 1927, 53.
23. Juler: *Tr. Ophth. Soc. U. Kingdom*, 1913, 58.
24. Coulter: *Tr. Ophth. Soc. U. Kingdom*, 1913, 69.
25. Paton: *Tr. Ophth. Soc. U. Kingdom*, 33:69.
26. Zimmerman: Personal communication, 1929. Also *Am. Jour. Med. Sci.*, appearing after this article was written. July 1929, 92.
27. Benedict: *Jour. Am. Med. Assn.*, 1928, 95.
28. Hensen: *Ztschr. f. Augenheilk.*, 5:73.
29. DeRuyter: *Arch. f. Augenheilk.*, 90:231.
30. Thompson: *Am. Jour. Ophth.*, 7:27.
31. Kuhnt: *Ztschr. f. Augenheilk.*, 1912, 333.

THE U. S. PHARMACOPEIAL CONVENTION

The Council on Pharmacy and Chemistry has issued a report calling attention to the call for the appointment of delegates to the United States Pharmacopeial Convention. The Council urges all the organizations which are entitled to delegates to select persons who are noted for high ideals, for breadth of vision, for sane understanding, and for sound judgment, as well as for technical knowledge, men who are fitted by temperament and training to collaborate, to help by deed and by counsel to keep the United States Pharmacopeia a work in which American medicine and American pharmacy may feel a just pride; a work that fairly reflects modern medical and pharmaceutical science; a work that is conservative of the best of the past, and progressive, constructive, sensitive to the best of the new. The Council discusses the character of the work of re-

vision and the men required for this work. It points out that the selection of drugs to be admitted to the Pharmacopeia must be determined primarily by their therapeutic usefulness; that these are medical matters, and therefore fall within the technical province of the physicians of the revision committee; and that the definite recognition of this principle in the last revision contributed notably to its success and should be continued. The Pharmacopeia should be a working manual of the present era and not an antiquarian museum. New drugs should be admitted freely when their therapeutic usefulness appears established, and some old drugs which have fallen into neglect or disrepute should be omitted. The policies of the present revision have earned for the Pharmacopeia "the sanction of the medical community and of the public" and may safely be continued. (*Jour. A. M. A.*, September 28, 1929, p. 989.)

PROGRESS IN KNOWLEDGE OF GOITER WITH PARTICULAR ATTENTION TO SURGICAL TREATMENT*

JOHN DEJ. PEMBERTON, M.D.
Rochester, Minnesota

WITHIN recent years evidence has been unmistakable of a significant change in the attitude of the medical profession toward the goiter problem. The former state of general indifference, probably fostered by the belief that the solution of this problem was the duty of a limited group of specialists, has been supplanted by one of widespread active interest in acquiring accurate knowledge of the diseases of the thyroid gland and their treatment. Nearly every phase of the problem is now being eagerly attacked by a steadily increasing number of investigators. Illustrative of this are: the numerous surveys of the incidence of goiter; study of its prevention, and the institution, in schools, districts and states, of prophylactic measures sponsored by public health authorities; the organization and rapid growth of clinics for the observation and treatment of goiter; the great increase in the number of surgeons devoting full or partial time to the operative treatment of goiter; the development and growth of metabolic and research laboratories for the study of goiter; the increase in the number of articles and lectures on goiter, and the organization of medical societies for the study of goiter. These as well as other facts show conclusively that the profession has been aroused and in turn has taken a more intelligent interest in educating the public on this subject. This awakening of interest, with the consequent dissemination of knowledge concerning the diseases of the thyroid gland, has played a significant part in the recent advances made in this field of medicine. These advances have been particularly apparent in the prevention of endemic goiter and in the improved immediate and end-results of the surgical management of toxic goiters consequent on early diagnosis and treatment.

The progress made in the treatment of goiter during the last decade has been stupendous, greater than in any twenty-five-year period of its history, and the medical profession has much

of which to be proud. Yet, the total knowledge of the thyroid gland and its diseases, when considered in relation to the magnitude of the whole goiter problem, shrinks to insignificant proportions. The seriousness and importance of the problem can be measured, to some extent, by the prevalence of goiter and by the effectiveness of the means of prevention and treatment.

According to numerous surveys, carried out for the most part by public health officers in various districts in the country, and according to the records of general examinations of youths in the World War, there is an incredibly high incidence of goiter in this country. This varies in different localities; broadly speaking the disease is more prevalent in mountainous and inter-mountainous regions than on the coastal plains. The scope of this paper does not permit full discussion of this phase of the question, but I wish to allude to two reports which give some concrete conception of the prevalence of goiter. In a statewide survey of Utah, Wallace and Beatty examined 110,086 school children, representing 80 per cent of the total school-going population, and found, in 32 per cent of the boys and 54.5 per cent of the girls, some degree of enlargement of the thyroid gland. From an examination of adults in the areas where goiter is most frequent, they estimated that the percentage of enlargements that spontaneously disappeared was very small, perhaps less than 20 per cent for male children, and less than 10 per cent for female children. Similar surveys of school children in other western and midwestern states disclosed varying percentages of enlargement of the thyroid gland, all astonishingly high. The publication of the results of the examination by the Draft Board served a useful purpose not only in proving that a high incidence of goiter prevailed in certain states, but in demonstrating that no state was free from goiter. For instance, of the men examined from the state of Minnesota, eleven out of every thousand had some form of goiter. Since the ratio of the incidence is one male to three or five females, it is estimated, on the as-

*From the Division of Surgery, The Mayo Clinic, Rochester, Minn. Read in symposium before the Minnesota State Medical Association, St. Paul, May 13 to 15, 1929.

sumption that the same relative distribution of goiter exists in the female, that twenty-two to thirty-three persons out of every thousand of the population of the state of Minnesota have goiter. The extent of the problem may be viewed from another angle. In the last decade there has been an enormous increase in the number of surgical operations on the thyroid gland. This has not been confined to clinics situated in goitrous areas, but to those in districts which formerly were supposed to be nearly free from goiter. In the last seven years in The Mayo Clinic the percentage increase of patients operated on for disorders of the thyroid gland has been fifty-six and undoubtedly a similar percentage increase has occurred in other clinics where the operative treatment of goiter has been stressed.

In the past, unnecessary bewilderment and confusion have existed in the minds of the profession, and of the laity, with regard to diseases of the thyroid gland. This has been owing to the lack of uniform nomenclature and classification. The clinical classification of Plummer, simple yet comprehensive, is the one now most widely accepted and it is steadily gaining adherents. It is to be hoped that the time soon will arrive when this or some other equally simple classification will be generally adopted by the medical profession and understood by the laity, so that the diseases of the thyroid gland may be discussed with clarity. Plummer classifies these diseases as: (1) diffuse colloid goiter; (2) adenomatous goiter without hyperthyroidism; (3) adenomatous goiter with hyperthyroidism; (4) exophthalmic goiter; (5) myxedema; (6) cretinism; (7) thyroiditis; (8) malignant and (9) congenital anomalies. I shall confine myself here to a brief outline of certain phases of the subject which I believe are not clearly understood by many physicians. For convenience I shall divide my subject into problems related to colloid and adenomatous goiter and those related to exophthalmic goiter.

DIFFUSE COLLOID GOITER AND ADENOMATOUS GOITER

From long usage the term "endemic goiter" or "simple goiter" has come to include the two forms: diffuse colloid, and adenomatous or nodular goiters. These two broad types have certain significant similarities, the age at onset, the geographic distribution in areas in which the

water supply is low in iodine, and the almost complete control of incidence by the adequate prophylactic administration of iodine. On account of such similarity, it is presumed that the etiologic factors are the same. Certainly deficiency of iodine is the basic factor in the cause of the disease. There may be other contributing factors, such as infection, food-deficiency, the physiologic phenomena associated with rapid growth, menstruation, pregnancy, lactation, and the like. Congenital origin accounts for a small percentage. In 1917, Marine, David and Kimball, as a result of an intensive study of school children in Akron, Ohio, demonstrated conclusively that endemic goiter could be prevented by supplying the body with an adequate amount of iodine. Numerous workers have since confirmed these observations, so that today there can be no reasonable doubt as to the efficiency of the method in preventing endemic goiter. Organized work in the prevention of goiter, however, has proceeded slowly, and today only seven states, New York, West Virginia, Ohio, Michigan, Utah, Oregon and Washington have taken up the work as a program of state health. In many states and communities situated in the goiter belt, organized prophylactic measures are not being carried out. This apparent neglect is accounted for partly by the confusion existing in the minds of the medical profession with regard to the possibility of inducing hyperthyroidism in persons with long-standing goiter if iodine were administered to the whole community. There is considerable historic background and some confirmatory evidence that the administration of iodine, in large doses, to this type of patient may initiate hyperthyroidism. It has also been contended that the general use of iodine in prophylaxis, even as small an amount of iodine as is contained in iodized salt (one part of potassium iodide to 5,000 parts of salt) is sufficient to cause harm. As evidence of this contention cases are cited in which the hyperthyroid status was induced by the taking of iodized salt. Obviously this is not convincing, for in many more similar cases in which iodine has not been given hyperthyroidism has developed. In a recent article Kimball reported the result of a study of goitrous persons in several counties in Michigan in which iodized salt has been used by a large part of the population for from one to four years. He examined 1,229 patients with goiter and classified

them in four groups: (1) those who had used iodized salt, 655; (2) those who had not used iodine in any form, 419; (3) those who had used iodized salt and other forms of iodine, 114, and (4) those who had used other forms of iodine only, 41. The percentages of hyperthyroidism in the four groups were: 4.1, 55.5, 17.5, and 20, respectively. Thus it may be noted that the largest percentage of hyperthyroidism was in the second group, in which iodine had not been used in any form. Certainly there is no evidence here of any causal relationship between the administration of the small amount of iodine contained in iodized salt and the induction of hyperthyroidism. In view of the fact that the effectiveness of administering small amounts of iodine to prevent colloid and adenomatous goiter has been demonstrated conclusively and that there has been no proof of danger connected with its use, it is obvious that the time has arrived for the medical profession to sponsor an organized program of the prevention of goiter throughout the country.

Diffuse colloid goiter.—The diffuse colloid type of goiter occurs in adolescence, usually does not produce symptoms, and often the goiter disappears spontaneously during the third decade of life, or earlier if the patient is treated with iodine or thyroid extract. Except from the viewpoint of prevention, diffuse colloid goiter does not present a great problem. Only for the goiter that attains enormous dimensions, that is associated with adenoma, or that persists in adult life, is surgical treatment recommended.

Adenomatous goiter.—The changed attitude of the profession toward the goiter problem is well illustrated in the newer conception of the potentialities of simple adenomatous goiter. Not many years ago, it was widely believed that, aside from disfigurement and possible tracheal obstruction, the presence of a nodular goiter need cause little concern. Very often the professional advice given to such a patient was: "Don't bother the goiter until the goiter bothers you," and very often after the lapse of years the patient returned to the physician on account of loss of weight, weakness and heart trouble as a result of hyperthyroidism. Even then, in many instances, the causal relationship between the goiter and the symptoms was not recognized, and the only advice or treatment given the patient was a prescription for digitalis. Today the patient should

be told definitely that an adenomatous goiter will not disappear spontaneously and that it cannot be made to disappear by other than surgical means. Operation is accompanied by a mortality of less than 0.2 per cent and by low morbidity. Moreover, the chance of recurrence of adenomas if patients are operated on at the age of thirty or more is extremely small, probably less than 1 per cent. A large percentage of the so-called recurrences are not true recurrences in the sense that new adenomas develop, but are the result of the growth of adenomatous tissue overlooked by the surgeon at the time of operation. To retain the goiter entails certain risks—namely, the development of hyperthyroidism, of malignant change and the production of tracheal compression, usually from extension of the growth behind the trachea or into the chest; any of these would definitely increase the surgical hazard.

Plummer has pointed out that in cases of adenomatous goiter there is a definite chance that hyperthyroidism will develop on an average of fifteen years after the appearance of the goiter. It is difficult to estimate accurately the proportion of patients with non-toxic goiters which later become toxic; to arrive at such an estimate would require repeated follow-up examinations of a large group of untreated patients with adenomatous goiter, over a period of years, until the result of the disease in the last survivor was known. In all the adenomas operated on in The Mayo Clinic the percentage of toxic adenomas has been increasing yearly. During the last six years (1922-1928) 6,195 operations were performed on patients with adenomatous goiters; of these, 2,576 (41 per cent) had toxic adenomas. It is apparent that this is not an accurate estimate of the incidence in general, but to me it would seem conservative to estimate the occurrence at more than 25 per cent. Then if, in a case of non-toxic adenoma, there is a chance of only one in three or four of the development of hyperthyroidism, why is it advisable to operate before the goiter actually becomes toxic? The answer is that delay may be attended by unnecessary risk. In most cases of adenoma the onset of hyperthyroidism is so insidious that often the patient does not realize a change in his condition until the heart or liver is affected; the operative risk is then increased and the prospect of ultimate cure correspondingly diminished.

The sum of knowledge concerning the rela-

tionship of adenomatous goiter to malignant disease of the thyroid gland can be expressed by the statement of a few facts. Data are not available to determine the relative frequency of malignant and of benign tumors of the thyroid gland, as extensive surveys of the incidence of both conditions in large, populous communities would be necessary. Some idea of this may be had from the registrations in clinics and hospitals. Obviously, however, this is not an accurate measure of conditions, since many of the patients with simple nodular goiter never seek medical advice, and all patients with carcinoma of the thyroid gland eventually come to the physician. In The Mayo Clinic, from 1910 to 1926, inclusive, the ratio of malignant tumors of the thyroid gland to all simple goiters (colloid and adenomatous) was 438 to 16,110 or 1 to 36.7 (2.7 per cent). Of the 276 patients with malignant disease of the thyroid gland who were operated on, 239 (87 per cent) presented unquestionable evidence that the malignant neoplasm originated in a pre-existing goiter. Furthermore, as it is often impossible to make a clinical diagnosis of malignant disease of the thyroid gland while the tumor is still operable, that is, before it has invaded surrounding structures, so it is impossible to exclude the possibility of a malignant condition. Of the 276 cases in which operation was performed, the records show that the preoperative diagnosis was not suspected in 65 per cent.

Although the extent of the risk resulting from neglect of an adenomatous goiter cannot be accurately estimated, I believe that this danger is sufficient to be taken into account in formulating an opinion as to the advisability of the removal of a simple adenomatous goiter. In view of the exceedingly low operative risk and morbidity, and the very small incidence of recurrence after operation if patients are aged thirty years or more, and in the absence of specific contra-indications, I believe that operation is warranted in nearly all instances. Certainly if operation is not advised the patient should be under periodic observation, so that any change in the condition may be detected.

EXOPTHALMIC GOITER

During the last ten to fifteen years the general problem relating to exophthalmic goiter has been greatly influenced by three factors: (1) the enormous increase in the incidence of exophthalmic

goiter; (2) more knowledge of the disease in the possession of the profession and the laity, and (3) the tremendous improvement in its surgical management.

Within the last decade, statistics from goiter clinics have shown a large yearly increase in cases of exophthalmic goiter, far in excess of that of the other varieties of goiter. Thus, in The Mayo Clinic during the last five years, the percentage increase of patients with exophthalmic goiter has been over 100.

The cause of exophthalmic goiter is unknown. All evidence indicates that an intensive stimulus of unknown source, operating probably through the sympathetic system or the blood and acting on the entire gland, drives it to the point of an overproduction of an active agent. According to Plummer this agent is abnormal in quality as well as quantity and when in the tissues of the body it causes all the phenomena of the disease. The cause or nature of the stimulus, as well as the conditions under which it functions most effectively, are not known. Only scanty data concerning its etiology are available. From the report of the Draft Board, and from my personal observation of patients from different localities, I am forced to the conclusion that the incidence of exophthalmic goiter is high in those districts in which the incidence of endemic goiter is high. This analogy applies only in the United States. In Switzerland and certain other mountainous regions of Europe and India, the incidence of endemic goiter is very high, but exophthalmic goiter is comparatively infrequent. Colonel McCarrison of the British Army observed only a few cases of exophthalmic goiter in the native Indian; yet in some goitrous regions, the incidence of endemic goiter was extremely high. As already pointed out, deficiency of iodine is the most significant etiologic factor in the production of endemic goiter. Can deficiency of iodine be a factor also in the causation of exophthalmic goiter? If so, how can the dissimilarity in the high incidence of exophthalmic goiter in goitrous regions in the United States and its very low incidence in the goitrous regions of Europe and Asia be reconciled? Are there any outstanding differences between the people and conditions of life in the United States and Europe and India? The American people are living at a speed far greater than that at which the others live. The nervous and emotional strain and tension result-

ing from this is incomparably greater in the American people. It seems reasonable to speculate on the possibility that nervous tension, extreme worry, fright and other intense emotions may be the stimulus which, under favorable conditions, may drive the thyroid gland to the excessive activity that may result in exophthalmic goiter. Deficiency of iodine or infection may lower the resistance of the thyroid gland, thereby making its condition favorable for its characteristic response to the stimulus. In the United States the stimulus as well as the favorable conditions prevail; in Europe and India the stimulus is largely lacking.

The important factors that have contributed to the recent development of the surgical management of exophthalmic goiter have been the introduction of iodine in the preparation of the patient, improvement in surgical technic, and early diagnosis and treatment. Today, in order to appreciate fully the effects and the clinical significance of administering iodine to the patient with exophthalmic goiter under preparation for surgical operation, it is necessary to recall that before its introduction, in 1922, the surgeon was uncertain, in fully two-thirds of his operations, whether an unexpectedly severe and often fatal post-operative hyperthyroid reaction might ensue. Inability to foretell in which case a severe crisis would occur was the bane of the surgeon's existence, for these crises were the immediate cause of death in fully 50 per cent of the patients who died. To lessen the possibility of these reactions, the operation in stages was resorted to in 66 per cent of the cases; in many instances, procedures in three to five stages were performed within the period of three to eight months. This resulted in additional suffering and economic waste. Since the introduction of iodine, post-operative reactions have been eliminated, operations in multiple-stages are practically abolished, and the operative mortality rate is reduced to well under 1 per cent. Thus, in the last six years in The Mayo Clinic, since the pre-operative preparation has been perfected and standardized, more than 6,500 patients have been operated on with only sixty deaths, a mortality of 0.91 per cent.

Contributing in large measure to the improved immediate and end-results of surgical treatment has been the tendency for the patient to seek operation early in the course of the disease, before

the development of irreparable visceral degeneration. The average duration of the disease in all patients operated on in 1910 was thirty-three and fifty-six hundredths months. Since then, the duration has gradually but definitely decreased, until in 1928 it was only fourteen and thirty-five hundredths months. To state it differently, the average patient with exophthalmic goiter in 1910 had the disease for more than two and a half years before submitting himself to operation, whereas in 1928 the patient had the disease for little more than one year. The effect of this shorter duration on the immediate and end-results of surgical operation has been very pronounced. Illustrating the influence of the duration of the disease on surgical mortality, I wish to point out again the statistics of The Mayo Clinic for 1926. There were 1,626 operations on 1,572 patients with exophthalmic goiter. Thirteen patients died, a mortality of 0.83 per cent. The average duration of symptoms of hyperthyroidism in the 1,572 patients was fifteen and nine-tenths months. Only one of the thirteen patients who died had symptoms for less than fifteen months. The average duration of the disease in the remaining twelve was thirty-eight months. Furthermore, there were 795 patients with exophthalmic goiter who had had the disease for twelve months or less. Only one died, a mortality of 0.12 per cent. The remaining 777 patients had had the disease for more than twelve months. Twelve of these died, a mortality of 1.5 per cent.

The cause of delay on the part of the patient in submitting to operation is frequently a belated or wrong diagnosis. An incredibly large percentage of the patients who come to The Mayo Clinic with exophthalmic goiter have not had a previous correct diagnosis. In some of these the symptoms are not clear cut and an accurate diagnosis can be made only after repeated tests and observations. In others, however, the diagnosis should have been clear, if the possibility of exophthalmic goiter had been considered in the differential diagnosis. Frequently exophthalmic goiter is not considered owing to the fact that the patient's chief complaint, such as loss of weight, cardiac and gastric trouble, or diarrhea, is in itself not suggestive of this diagnosis, and the patient does not present exophthalmos and a visible tumor of the neck. Exophthalmos is present in about 50 per cent of the patients with

exophthalmic goiter who come to the clinic and a tumor of the neck often is not visible. From student days most physicians have thought of exophthalmic goiter as a syndrome presenting certain cardinal symptoms such as exophthalmos, tumor, tremor, tachycardia and nervousness, and unless this combination in whole or in part is obvious, the idea of exophthalmic goiter does not occur to many of them. Instead, the disease should be conceived of as one of altered physiologic processes resulting in an increased rate of tissue metabolism. Then such symptoms as loss of weight, in spite of a good or an increased appetite, weakness, profuse sweating, intolerance

to heat, and tachycardia will at once suggest the diagnosis, even though some of the more distinctive signs, such as tumor, exophthalmos and staring eyes are not present. From available data it would seem that, until the cause of exophthalmic goiter becomes known, further improvement in the results from surgical management is dependent on early diagnosis and treatment.

BIBLIOGRAPHY

1. Kimball, O. P.: The efficiency and safety of the prevention of goiter. *Jour. Am. Med. Assn.*, 1928, xci, 454-460.
2. Wallace, James, and Beatty, T. B.: Goiter survey. Utah State Board of Health, 1924-1925.

THE NICOTINE CONTENT OF TOBACCO

About a year ago, the Connecticut Agricultural Experiment Station published a report which showed that the claim that certain tobaccos has been "denicotinized" was largely without foundation, for it was found that there were, among ordinary tobaccos, brands in which the nicotine was either not in excess or was actually lower than that present in the processed tobaccos, sold under the implied claim that they were practically free from nicotine. The Station has now issued a further report giving the results of the analyses of tobaccos of both the processed and unprocessed types. Altogether, eleven brands of unprocessed pipe tobacco have been analyzed and found to have an average total nicotine content of 2.04 per cent; four brands of so-called denicotinized pipe tobacco gave an average total nicotine content of 1.3 per cent; ten brands of ordinary unprocessed cigars gave an average total nicotine content of 1.51 per cent, while seven brands of processed, or so-called denicotinized, cigars gave an average total nicotine content of 0.95 per cent. In the cigaret field forty-six analyses were made of ordinary unprocessed products, giving an average total nicotine content of 1.77 per cent, as compared with 1.09 as the total nico-

tine content of twelve so-called denicotinized brands. From this work it can be seen that while some of the so-called denicotinized products contain less nicotine than the ordinary unprocessed brands of the same class, they still contain material quantities of nicotine. The main difficulty in determining whether or not the claims made by manufacturers of so-called denicotinized tobacco products are reasonable lies in the failure to know the amount of nicotine in the various tobaccos *before* they were processed. However, this work permits the tobacco user to arrive at some worth-while conclusions on this point. It should not be forgotten, also, that nicotine is probably not the only harmful element in tobacco smoke, and that Dixon has reached the conclusion that moist tobacco produces much more serious effects than dry tobacco, and has even suggested that the water content of tobacco might be a more harmful factor to the smoker than the nicotine content of the tobacco, and that the condition of the tobacco and the form in which it is smoked are probably more important factors in determining the amount of nicotine that the smoker gets than is the actual nicotine present in the original tobacco. (*Jour. A. M. A.*, September 21, 1929, p. 938.)

THE TREATMENT OF TOXIC THYROID WITH RAYS OF SHORT WAVE LENGTH*

GAGE CLEMENT, M.D.
Duluth, Minnesota

ONE of the most interesting chapters of modern medicine is woven around the treatment of the toxic thyroid. Before 1903 the treatment of the toxic thyroid was almost entirely medical. Since 1903 it has been largely surgical. From about 1910 to the present time, radiation, either by x -ray or radium, has been advocated and is slowly but surely gaining ground.

The progress which radiation treatment has made has been proportional to the opportunity which it has had to prove its efficiency. In this country it is customary to operate upon the gland, while in Europe the majority of the cases receive therapy by radiation. The advocates for radiation number some of the best men in Europe. Rowden states that in the last ten years only seven toxic thyroids have been operated upon in the city of Leeds. According to Holtzknecht, sixty per cent of the cases of Basedow's disease are cured by roentgen therapy, while another twenty to thirty per cent are without doubt improved. Schwarz advises against any therapy except radiation and says that x -ray produces the best results. Pordes summarizes his experience by saying that all thyroid toxicoses respond to x -ray therapy. Gudzent prefers radium and believes that it is the therapy of choice in the treatment of this disease.

Statistics show that about the same number of patients are benefited by radiation as by surgery. Such statistics are compiled from all sources, both in this country and abroad, and are the representation of general surgery and radiation and not the results from a few selected groups. They show that by either method of therapy about seventy-five or eighty per cent are cured.

Rays of short wave length are derived from two sources, the roentgen ray and radium. Choice between them depends upon the familiarity of the operator with them and the amount of radium available. In biological action they are approximately alike. The intensity of the radiation depends upon the source of supply. For use

at a distance, such as is necessary in the treatment of the thyroid gland, an immense amount of radium is required to produce the same amount of radiation that is available from an ordinary roentgen apparatus delivering a current from a potential of 200 kilovolts. In quality, the gamma rays from radium range from 0.01 A.U. to 0.10 A.U., while those from x -ray range from 0.10 A.U. to 0.20 A.U. The depth of penetration of roentgen rays exceeds that of radium.

Radium is applied by the method known as the "radium pack." The pack consists of needles or tubes containing ten milligrams each of the radium element. They are so placed that each one is one centimeter from its fellow and they are of sufficient number to cover the entire area of the gland to be radiated. The whole is placed at a distance from the skin of two centimeters and an additional filter of one millimeter of brass is interposed between the pack and the skin. The pack is left in place from ten to sixteen hours, depending upon the severity of the case. The average time is twelve hours. The pack has the advantage of being available for the bed patient and may even be taken to his home. When he can be moved, x -ray therapy is preferable because it consumes less time and is less expensive.

In using x -ray, we apply 225 "r" units of a quality of 0.16 A.U. over the entire thyroid and upper part of sternum, from the anterior direction. Such a treatment is repeated every two or three weeks, depending upon the basal metabolic rate. Such radiation may be given indefinitely without producing any injury to any normal tissue which it may touch except the vocal cords. These must always be protected with lead. The radiation loss of seven per cent per day precludes the possibility of doing the normal tissue any harm.

The metabolic rate is the criterion for the amount of radiation employed. The higher the rate, the more quickly the patient responds. We feel that it is inadvisable to treat patients whose rate is below a plus twenty. It is worthy of note that hypothyroidism is more likely to occur from radiation than from surgery. A careful check

*Presented before the annual meeting of the Minnesota State Medical Association, St. Paul, May 14, 1929.

of the metabolic rate should be made before each treatment during the time the patient is receiving radiation therapy. After treatment, the rate immediately rises and in some cases the increase is as much as forty per cent. This reaction gradually subsides and in a week or ten days the reading is lower than the pretreatment reading.

The slower the fall in the basal metabolic reading, all other things being equal, the better the result. A few patients show no fall and after three or four treatments such patients are recommended for operation unless they have been previously operated upon. If they have had an operation an additional treatment or two, with x-ray of a different quality, or with radium, will often prove beneficial and turn the tide in their favor.

The action of rays of short wave length upon the toxic thyroid is simply that of decreasing the activity and retarding the function of the pathological cell. The cell is destroyed only during the process of division, while the effect upon the mature cell is that of lessening its secretion. Activity and function are not alike and the amount of either is not revealed by microscopic examination, unless the tissue be living. The determination of such function is made before death and is best represented by the patient's condition. The results of radiation upon the gland have often been described and vary from no visible change whatever to a marked fibrosis. Marked fibrosis may be the natural result of the disease itself. To prove that it is the result of radiation is very hard indeed. The advance in radiation equipment and measuring instruments has made it possible to produce all the beneficial effects necessary to hyperactive and diseased cells without affecting the normal surrounding tissue and skin.

The only contraindication to radiation therapy is a large gland showing definite compression symptoms. Such a gland should be removed.

An example of what may be accomplished by radiation is shown in the following typical case:

A married woman, forty-eight years of age, who had passed the climacterium four years previously, had been perfectly well until eight months before coming under observation nine years ago. She was complaining of shortness of breath, rapid pounding heart, loss of strength, nervousness, loss of appetite and some loss of weight. The pulse was 140, basal metabolic rate plus 60, blood pressure 180 over 110. There was a slight systolic murmur at the apex, a moderate enlargement of the thyroid gland and some exophthalmos. She was exhausted from walking up a moderate incline a distance of half a block. She refused operation and was referred for radiation therapy. She was given one treatment each three weeks, of the quality of radiation as outlined above, for five treatments, and an additional treatment after an interval of two months. She reported at regular intervals for four years and was found to have remained in perfect physical condition. A check of her condition last January showed that she is still well.

Between 1921 and 1925 we treated sixty patients with the following results. One patient died of intercurrent disease after slight improvement; three received no relief; five, no permanent relief. The remaining fifty-one patients are alive and well, with the exception of one who has since died of pneumonia, four years after treatment for the goiter. The apparently cured cases after five years number eighty-five per cent.

In conclusion, we feel that the patient with toxic thyroid should be given the advantage of radiation therapy since the treatment causes no pain, no scar, little or no loss of time from hospitalization, no operative mortality and, in addition, because the results are as good as by any other method of treatment.

DISCUSSION OF SYMPOSIUM ON GOITER

DR. ELLIOTT P. JOSLIN (Boston, Mass.): Mr. Chairman and Members of the Society: When a patient with a decompensating heart comes to me, the first thing I look for is to see if there is a possibility of that patient having hyperthyroidism as well; if to the old heart disease hyperthyroidism has been added and the extra strain has decompensated the heart, I can send that patient to the surgeon and the patient will get better. When I see a patient with a large thyroid gland and I suspect an adenoma, I send the case to Dr. Lahey for its removal, provided he confirms the diagnosis, because I don't want any of my patients to die of cancer of the thyroid. As for my diabetic patients whom I expect to live forever, they go first of all.

Third, if the patient is a diabetic I always scan him

as closely as possible to see if there is any chance of hyperthyroidism, because hyperthyroidism makes a diabetic worse. Formerly they were the ones that died. Today, if they can be operated on, they are not cured, none of them that I have seen in this group has been cured, but they are so much helped that one welcomes this coexistent condition, just as one is hopeful about the gallstone diabetic.

If I send all the cases where there is a possible heart disease and all the adenomas and all the diabetics where there is hyperthyroidism to the surgeon, it doesn't leave much for the medical men, and I don't think it should leave much for the medical men. I do think it is very interesting that some doctors use other methods. It is fine that we don't all do the same thing, because that gives opportunity for new ideas.

THE EARLY DIAGNOSIS OF HEART DISEASE*

CHARLES LYMAN GREENE, M.D., and JOSEPH F. BORG, M.D.
Saint Paul

THE past twenty-five years have witnessed strides in the diagnosis and treatment of heart disease, the extent of which has been inadequately realized and the importance of which has certainly not been reflected in a corresponding improvement of service on the part of the profession to the multitude of individuals so unfortunately afflicted. This situation is the more forcibly brought to our attention by studies of mortality statistics which show that while in later years there has been a gradually decreasing mortality from diseases caused by known bacteria, indicating the field of greatest medical progress, the death rate from cardiovascular disease has been rapidly increasing, with no signs of abatement. In 1922, circulatory disease caused more deaths than all infectious and preventable diseases combined, and the death rate in the cardiovascular group has mounted from 122 per 100,000 in that year, to 194 per 100,000 in 1927.

Life insurance statistics¹ are of interest in this connection. Of all applicants declined for life insurance, 50 per cent is on a basis of circulatory disease, the majority of which is in individuals unaware of any trouble. In addition to this, the difficulty of early detection of these disorders is strikingly shown by the fact that the mortality from cardiovascular disease is as high in early policy years as in later, and is the same in large policy holders who are subjected to examination by several physicians. This serves only to emphasize the difficulty in diagnosing trouble of this nature early. Another fact, which is especially applicable to Minnesota, is that the rate of increase of the incidence of heart disease is much more rapid in rural than city communities, the rural figures including towns of 10,000 or less. No satisfactory explanation can be offered for this situation, but it shows the increasing importance of this problem to the country physician as well as to the city doctor, the faster living of whose patients might seem to make them more subject to circulatory disease.

These facts serve to emphasize the importance of this group of patients which we all meet daily

in practice. Wherever medicine has progressed in the alleviation of suffering it has been due to efforts toward prevention and the early diagnosis of disease. Prevention is closely related to the subject of etiology. In spite of our progress, the cause of cardiovascular disease is still indefinitely recognized, and while prophylaxis with its attendant care of etiologic factors is the first essential in reducing this great morbidity, our shortcomings here force upon us the necessity of early diagnosis, the wide spread knowledge of which will be of inestimable value in the arrest of incipient disease and the prolongation of life.

In the consideration of early diagnosis several general factors will bear emphasis. Unlike the kidneys, lungs and other organs, the heart is a solitary worker,² with no other structure able to take up its function, even vicariously. However, as if in consideration of this, the heart has been endowed with a normally large reserve strength, available on short notice, and giving to it a marked flexibility of action which obviates the probability of embarrassment, even under unusual strains. On the other hand, the extreme liberality of blood supply to the myocardium, many times as great as that of other organs, together with the fact that the heart is exposed to a multiplicity of bacteremias and toxemias, makes evident the dangers to which the heart is subject. This also shows the possibilities for great myocardial embarrassment when the blood supply of the myocardium is affected through general or local arterial disease. An important point to recognize is that the severity of a complaint is seldom related to the seriousness of the underlying disease, and this makes obvious the hazard of attaching undue significance to a single sign. Rather must thorough inquiry be made, and the sign or symptom evaluated with regard to the context of the clinical story.

Far and above all, in early diagnosis in heart disease is the study of symptoms. These are due to an accumulation of heart protests,³ nearly always ignored at their inception and insufficiently troublesome to attract attention at that time. They practically always follow an over-stepping of the heart muscle reserve and usually occur in

*Presented before the annual meeting of the Minnesota State Medical Association, St. Paul, May 14, 1929.

association with factors of increased myocardial demand. Particularly true is this of adults, but it must be recognized that children³ may carry these symptoms much longer uncomplainingly, and signs of greater obscurity here often result in the child undergoing examination. It is useless to ask the child regarding the earliest symptoms, because while they have been present, they are accepted by it as normal sensations. There are, however, the observations of several factors in the child that doesn't feel well, which should lead to further investigation of the heart side. Epistaxis while of course a somewhat common occurrence, is not infrequently associated with heart abnormalities. Indigestion or vague abnormal discomforts, and headaches are frequently early signs. Anemia of a secondary type is often found in children with chronic cardiac disease. They seem especially prone to it, and where no other cause can be found for it, and it is especially resistant to treatment, the suspicion of a cardiac origin should be entertained. The general activity and nutrition in children are always essential to investigate. They should be watched at their play for signs of earlier fatigue than their playmates, and for avoidance of certain types of physical exertion which they have found especially tiring. Much less strenuous forms of recreation will be indulged in, and their reduced activity at home is often a clue, being evidence of unconscious self protection which is seldom or never adequate. The reduced appetite which sometimes occurs, together with the possible anemia, leads to a state of undernutrition which always demands study. These suggestions regarding children hold true for either the acquired or congenital types although the anemia is usually associated with the acquired type.

However, the majority, by far, of patients involving this problem present themselves in later life and the predominating importance of symptomatology here leads us to discuss the following symptoms^{4, 5} of fatigue, pain, dyspnea, palpitation, cough, and abdominal symptoms. These do not make their appearance in the same order in different individuals but any one of them may constitute the first appreciable warning and serve to direct the patient to the care of the physician.

SUBJECTIVE SYMPTOMS

1. *Fatigue*.—Undue, or unusual fatigability

is one of the earliest signs, and one which is frequently long ignored by the patient. He believes he is slowing down, that with the advance of years he is entitled to this feeling and it is only when it becomes really embarrassing to his activities and progressively aggravated that he consults the physician. This fatigue may be associated either with muscular or mental work, both of which will sooner or later bring on other symptoms. It is provoked by an activity which the patient could formerly perform with ease, and while it will usually occur in close association with the effort, it may be considerably delayed in its appearance. Its cause may be difficult to determine, but is usually vascular stasis, mild asphyxias, anemia, retention of waste products, or vascular changes.

2. *Precordial Pain*.—It is far beyond the scope of this paper to attempt any adequate discussion of heart pain or distress. However, the subject is an important one, and the not infrequent occurrence of it early makes its origin and evaluation necessary. Pain is a sensation of the greatest degree of variability. It may manifest itself only as a vague precordial or substernal oppression or constriction, or it may be much more severe and distressing, making the patient feel as though he had a continuous weight over the chest. The complaint is one of heaviness or pressure, leading at times to the sensation of choking. On the other hand, the pain may be sharp or lancinating in character, varying from degrees of mildness hardly noticed to the severe pains of angina pectoris and coronary thrombosis, often untouched by large doses of narcotics, the most excruciating possible. Of particular significance are the conditions under which these distresses occur and their radiations. Their occurrence after eating, or moderate or severe exercise, or when walking in a cold wind, are all very suggestive of the cardiac origin of the distress. These conditions impose greater degrees of strain on the heart than its limited reserve will permit without complaint, and such provocation of pain or distress must be regarded as cardiac until proven otherwise. The radiation of chest pain is also often of great value in determining its significance. Either the dull or the lancinating types may radiate, most typically from the region of the apex over the left chest wall, to the sternum, or to the left, occasionally the right, shoulder and arm. It may also go

through to the interscapular region of the back, or the neck on either side and it should be noted that occasionally the radiated pain is more severe than that of the primary seat. Not infrequently cardiac pain is considerably delayed in its appearance after a provocative cause, sometimes occurring hours later when at rest, and occasionally awakening the patient from sleep at night.

It must not be forgotten that similar types of pain are produced by a variety of conditions, as mediastinitis, pleurisy, chest tumors, neuralgias, neuritis, etc., and a careful examination is always necessary for a correct diagnosis.

3. *Dyspnea*.—Shortness of breath on exertion or after meals, especially when progressively increasing in severity, is frequently the first sign of heart damage. It means that the limits of cardiac reserve for that individual have been overstepped and is significant of early heart failure. Its occurrence in other conditions as anemias, or diseases of the lungs or mediastinum, makes it necessary to carefully eliminate these. When no other cause can be found and the symptom occurs alone, the patient should be treated as having incipient heart disease. Attacks of dyspnea at night occasionally mark the course of cardiac patients, and are at times the cause of the first complaint. These usually occur in elderly patients and are quite characteristic of heart disease where asthma and its typical expiratory wheezing can be ruled out. They are sudden temporary heart failures, usually with orthopnea and with or without pulmonary congestion.

4. *Palpitation*.—Palpitation is a less important symptom of heart disease because so prevalent in nervous individuals. All types of palpitation, where heart disease or heart damage can be eliminated, are due to acceleration of heart rate, whatever may be the cause. It occurs frequently enough as an early sign of cardiac embarrassment to warrant studied consideration. It is especially significant of cardiac origin when induced by exercise persistently or when associated with irregularity, at which times it is usually the response of a damaged heart. Histories of attacks of palpitation, sometimes expressed as flutters, are not infrequently periods of paroxysmal auricular fibrillation, paroxysmal auricular flutter, or paroxysmal tachycardia which may be the only complaint and yet one of great importance.

5. *Cough*.—Cough, without obvious good cause, coming on during or after eating or exercise, or with fatigue, should be considered as of cardiac origin. Such coughs are usually due to lung congestion, or the pressure of a great vessel on a laryngeal nerve, and while they are usually somewhat late in the picture, occasionally are complained of by patients who ignore earlier warnings of a different character.

6. *Abdominal Symptoms*.—Certain abdominal complaints not infrequently introduce a cardiac picture. Any patient suffering from loss of appetite, epigastric fullness, distress or pain, abdominal distension, gas or bloating, should be carefully investigated from the heart side, especially those past middle life and in whom the picture is not perfectly clear as indicating the abdominal origin of the complaints. This group of cases is usually insidious in its onset and further investigation often reveals the true cause of the condition. A more severe abdominal pain, just inferior to the sternum, excruciating and often not relieved by narcotics, is that of coronary thrombosis. It is often the first indication of a serious heart condition, and only too frequently results in operation for a supposedly acute abdominal condition, with almost inevitable fatality. This condition should always be borne in mind in severe epigastric pain. Angina pectoris may also manifest itself by a severe epigastric pain, and must be excluded in diagnosis, the therapeutic response to the nitrites being often helpful in such patients.

OBJECTIVE SIGNS

While the great importance of symptoms is not shared by physical signs in early heart diagnosis, diagnosis, there are certain findings that often point to the proper direction of investigation. A peculiar pallor, difficult to describe, rather grayish in shade, not associated with anemia, is often suggestive. Cyanosis is usually evident and in a patient not acutely ill, is usually on a cardiovascular basis, congenital or acquired. Pupillary inequality should arouse the desire to exclude aneurysm which frequently accounts for it, as also an inequality of pulses. A slight to moderate unnoticed edema of the anteromedial surfaces of the tibiae is often an unnoticed early manifestation of heart disease, and where not accounted for on other etiologic basis should serve as a lead to cardiac investigation.

Arrhythmias may be early findings, and since it is recognized that an irregularity of any type warrants a complete cardiac investigation careful search should also be made for the underlying cause. Arrhythmias such as premature contractions or auricular fibrillation, transient or permanent may cause no symptoms in many individuals, or they may be associated with sensations of palpitation or flutter. Determination of heart size is often of value because an enlarged heart is always pathological, and while this is a subject for discussion in itself, it must be remembered that extreme difficulty is often found in the determination of moderate degrees of cardiac enlargement, especially when present in that prevalent type of drop heart in the viscerotonic which, according to Goldthwaite, comprises 50 per cent of our population. The limitations of the value of percussion, even in the hands of the expert, is shown in the discrepancy of such figures with those of the six-foot x-ray plate and only serves to emphasize the importance of this procedure in giving information concerning the heart.

SUMMARY

The importance of the early diagnosis of heart disease cannot be overemphasized. It is shown on all sides by an increasing array of evidence pointing to the progressively enlarging mortality and morbidity from this disease. It is becoming of greater importance to the general practitioner than ever before. Difficulties are at times encountered in that symptoms pointing toward it are often found in other conditions which must be ruled out. Of greatest importance is the taking of a careful history with especial stress laid upon the ferreting out of the subjective complaints of the patient, especially fatigue, dyspnea, precordial pain, edema, cough, and abdominal symptoms. Physical signs are of much less value early, but may point in certain instances the direction of probable fertile investigation. Only by painstaking work in this direction can we hope to alleviate the distress caused by this captain of the men of death.

REFERENCES

1. DWIGHT, EDWIN M.: The next job in preventive medicine. *Life Insurance Medicine: New England Mutual Life Insurance Co.*, Vol. 1, 1926.
2. EYSTER, J. A. E.: Early diagnosis of chronic cardiac conditions. *Ill. Med. Jour.*, xliii, 297 (April), 1923.

3. GRIFFITH, J. P. C.: Heart disease in children. *Internat. Clin.*, Philadelphia, xxxiv, 1, 1924.
4. LARSON, H. N.: Preclinical stage of cardiovascular disease. *Jour. Med. Soc., New Jersey*, xxiii, 206 (May), 1926.
5. SMITH, S. CALVIN: The preclinical stage of heart disease. *Jour. Am. Med. Assn.*, lxxxvi, 1902 (June 19), 1926.

918 Lowry Medical Arts Building.

DISCUSSION OF PAPERS BY DRs. BORG AND BARRON*

DR. S. MARX WHITE (Minneapolis): The discussion of so broad a subject as that presented by these two papers is extremely difficult. Dr. Borg has given us some excellent suggestions about the difficulties of early diagnosis of the heart. Dr. Barron, in his encyclopedic presentation, has brought up so many things that one is sorely tempted to discuss them at length. However, I think the greatest value to one who discusses the paper, or attempts to discuss it, or to those who listen, might be an attempt to suggest two or three things brought out in the papers which trouble some of us who attempt to make accurate diagnoses in heart disease.

One of the difficulties which I most commonly encounter in the recognition of cardiac trouble and its congeners is what might be called the substitution symptoms, the pain substituting symptoms. Dr. Borg referred to precordial pain, yet we are certain that there are patients who have exactly the same fundamental pathologic changes that do not express pain as a sign of cardiac overstrain, but they have some substitution symptoms. Lipman has recently devoted a very large amount of time to this, and those of you familiar with cardiac pathology will recognize the importance of his name in connection with cardiac studies. He has recently given a large amount of time and has made a very interesting and valuable presentation of the value of these substitution symptoms, the most important of which are dizziness, fatigue. One would think that fatigue, for instance, would be the sign of the pathological and physiological condition. It is not so. It may be purely a subjective symptom, a substitute for precordial pain. Fatigue, dizziness and confusion are among those that may be recognized.

Again, the symptom which needs extraordinary care in interpretation is palpitation. Both of the essayists have brought out the fact that most palpitation is not expressed in a pathologic condition. Yet it is a pathologic condition if we exclude that symptomatic palpitation when we go to see the lady of our choice and some such physiologic responses; but palpitation in the sense of that which people complain of most often can be found to be an expression of the perfectly normal heart, an expression of a disorder or an over-excited nervous system which is just as much subject to control and to help on the part of the physician as it would be if it were a cardiac disorder. As people consult me

*Dr. Barron's paper appeared in the August and September numbers of MINNESOTA MEDICINE, Page 487 and Page 535 respectively.

for cardiac disease I find a larger proportion of them not suffering from any damage of the heart which I can discover, but most commonly from disorders of its mechanism, from extrinsic or nervous sources.

That determination is not easy. One has to do two things. One has, first, to determine that the heart is not pathologic, and in my experience that is one of the most difficult things to do. Dr. Borg and Dr. Barron have both referred to heart size. Many pathologic hearts are not enlarged, and I need only to recall to your minds the fact that in coronary disease, in angina pectoris, we have certain cases in which the heart is not enlarged, and in coronary thrombosis there is no enlargement, and in the latter case we may have a patient passing out from rupture of the heart because of the occlusion of a considerable area of softened muscle. We must be extraordinarily careful before we make a negative diagnosis of cardiac enlargement. Having made that, the difficulty arises in determining what is the underlying condition, we will say, in the nervous system. That is where we as physicians have the greatest difficulty, where I, not trained specifically in neurological and psychiatric fields, find my greatest difficulty. I wish I were better trained. I think I have some sense of values so far as personality is concerned, and yet I find it is often necessary to call in the aid of the neuropsychiatrist to dig out from the personality of that individual the underlying irritant.

There was only one other point that I wanted to bring out in these difficulties, and that is the point referred to by Dr. Barron, and the truth of that I think we must attest, that in the field of cardiac pathology many of us are inclined to call nephritis a condition which isn't originally nephritis at all. It may be either arterial degeneration and its consequences, or else the passive congestion of the kidney which gives albumin, casts, blood, and all the other so-called typical symptoms of nephritis, and we are inclined when we find these changes in the urine to think we are dealing with a case of nephritis. We must use extraordinary care to exclude cardiac decompensation, because so frequently a hasty examination will make us think we are dealing with a renal case when a careful examination over a considerable period of time and under good control will show us that the condition is cardiac and not renal.

I would say that the x-ray is of very great value in the determination of the size of the heart, which can be demonstrated to be enlarged. I have very great difficulty in a certain group of cases in saying whether enlargement exists or not. Dr. Barron didn't have time to outline the differences in the shadow of the heart accompanying differences in physical build. These factors bring considerable added difficulty, when we see certain changes and a gross enlargement in the x-ray

that our fingers and other means of diagnosis do not give.

DR. F. A. WILLIUS (Rochester): Both these papers have been very contributory and very timely. The importance of the early recognition of heart disease cannot be too greatly stressed. Both authors have brought out very forcibly the increase in the incidence of heart disease in this country. It stands now as the greatest individual cause of death in this country, and that brings before us very forcibly our obligation and our responsibility as far as the prevention of heart disease is concerned.

You probably all are familiar that in 1922 the American Heart Association came into being, an organization that now has representative organizations in almost every state of the Union. Regrettably, Minnesota has been one of the last states to organize. The attempt is now being made. I think it is very necessary for all of us in the profession to give a good deal of thought and consideration to the question of prevention. I haven't time to discuss this thing fully, but there is one point I do wish to make that was already definitely suggested by Dr. Barron; that is, many of your vital statistics are inadequate owing to the fact that we have not had an adequate and comprehensive nomenclature or classification. We have all been talking a different language, and the advance in the future of a better understanding of heart disease is going to depend on more accurate diagnosis. I was very glad to hear the Doctor describe the usual diagnosis of chronic myocarditis, because that has been a cloak under which all forms of heart disease have been grouped, and it is a condition that in the strict sense of the term, and as he has shown and others have shown is a relatively rare disorder.

Dr. Barron's classification is very adequate. It is very much in text what the classification accepted by the American Heart Association is, and permits the diagnosis or the placing in this list of every known pathologic condition of the heart.

Dr. Barron didn't have much opportunity to go into the treatment of heart disease to any extent, especially the treatment of decompensation, and there is just one point there that I should like to mention. I believe since the introduction of quinidin by Frye in 1918, the greatest contribution to the treatment of heart disease has been the introduction of the mercurial diuretics, novasurol and salyrgan, especially their combination with ammonium nitrate and ammonium chlorid. The results in the combination of these drugs has been almost unbelievable. Since the quite general use of those therapeutic agents in this country the incidence and necessities for paracentesis has been reduced practically to a minimum. I think since 1924 we have performed no paracenteses.

PURPURA HEMORRHAGICA FOLLOWING NEO-ARSPHENAMINE*

JULIUS JENSEN, M.D.
Minneapolis

HEMORRHAGIC purpura following neo-arsphenamine is a rare condition; only two cases are reported in the American literature (Combes,¹ Morton Smith²). The occurrence of a case of this condition therefore seems to be of sufficient interest to warrant a brief report and discussion. The following case was a patient at the University Hospital under the care of Dr. H. L. Ulrich.

REPORT OF CASE

A. J., a railroad employee, aged 42, had twelve years ago a penile lesion which was diagnosed chancre and for which he was treated for about three months. Later he had been irregularly treated at different periods and he finally came to the University Hospital Dispensary on October 27, 1928, where he was found to be suffering from early cerebro-spinal lues. Until January 29, 1929, he had been given twenty injections of bismuth salicylate. From February 4th he was given neo-arsphenamine 0.4 grams once weekly, the last dose being given on March 11th. On March 2nd he had a nose bleed which was difficult to stop. Two days later another epistaxis occurred which required medical attention. He now also noticed hemorrhagic spots on his legs and that he bruised easily. From March 5th there was blood in the urine. For these symptoms he was admitted to the University Hospital on the evening of March 11, 1929. On admission he showed subcutaneous bruises all over his body, especially over the right eye. His nose was filled with clotted blood. The tongue was covered with hemorrhagic spots. The blood pressure was 115/62, the heart rate 68 and regular. Neurological examination confirmed the impression of early cerebro-spinal lues. Physical examination showed no other important findings.

The blood findings were:

Date	3/12	3/15	3/19	4/1	4/9	4/16	5/20
Hgbl.	60	62	38	40	50	59	58
Red Cells	2,590,000	2,800,000					
Platelets	50,000		130,000	272,000			240,000

White cells 3/12: 6,300, PMN's 70%, W.B.C. 25%, Eos. 5%.

Slight anisocytosis

Wassermann: positive

Spinal Fluid: Clear, pressure 150, Wassermann positive.

Colloidal gold curve 555541100

Treatment other than transfusion:

Hemostatic serum was given in 5 c.c. and 2.5 c.c. doses intravenously with no effect, and morphine gr. 1/6 when he was excited. He also received a course of ultraviolet light, beginning march 14.

Laboratory Tests: The urine contained gross blood until March 16th, from then on it rapidly became clear and continued so during the remainder of his stay in hospital.

The condition remained unaltered for the next few days with constant nosebleed. On the 15th he had large emeses of clotted blood. It was not certain whether this was previously swallowed or due to gastric bleeding. He became violent and restraint was necessary. He was then given a transfusion of 750 c.c. of blood after which his temperature increased to 101; for the next few days it was irregular, gradually coming back to normal on the 22nd. From March 19th no more bleeding occurred and his ecchymoses gradually disappeared. He made an uninterrupted recovery and was discharged from the hospital April 20, 1929. Since then there have been no more hemorrhages.

DISCUSSION

Frank³ classes purpura hemorrhagica and aplastic anemia together as varying degrees of depression of the hematopoietic function of the bone marrow. In purpura there is an exclusive decrease of blood platelets and in aplastic anemia the entire hematopoietic myeloid system fails. Anatomic damage to the peripheral vessels has not been proven in purpura. Possibly, therefore, the few cases which have been reported of aplastic anemia following the administration of drugs of the salvarsan group are of the same essential nature as the case reported by us. Only Moore and Keidel⁴ in this country have reported aplastic anemia after neoarsphenamine. Combe's case was probably not one of simple purpura for the white cells were diminished out of proportion to the general anemia and there was a complete failure of the granulocytic system to regen-

erate. It seems more appropriate to class Combe's case as one of agranulocytosis, because the platelets were well above the critical level and the changes in the red cells can be explained as being secondary to the hemorrhages. This

*From the Department of Medicine, University Hospital, Minneapolis.

is of special interest for our purpose, for Piney⁵ suggests that agranulocytosis may be another example of selective toxic effect on the bone marrow. In the study of the reported cases of "hemorrhagic diathesis" after drugs of the salvarsan group the cases with multiple hematopoietic disturbances imperceptibly blend with those of true hemorrhagic purpura; that is, cases where the change is exclusively thrombocytopenia. Thus intoxication with this group of drugs furnishes a good example of the common etiology of a large group of hemorrhagic disorders.

Practically all patients with hemorrhagic disorders after neo-arsphenamine are syphilitic and a luetic effect on the hematopoietic system might be considered a factor predisposing to the disorder. Syphilis may cause a simple secondary anemia and has been strongly suspected of being an etiological factor in some cases of pernicious anemia, but we have been unable to find any evidence in the literature that the luetic toxin causes depression of any strictly hematopoietic function.

Neo-arsphenamine therefore seems to be the sole exciting etiological factor. In this drug there are two toxic elements, the arsenic and the benzol ring. From Moore and Keidel's discussion⁴ it is evident that they believe they are dealing with arsenic poisoning, but neither Naegeli's nor Schittenhelm's handbooks contain reference to any myelotoxic effect of arsenic. It is generally conceived that the effect of arsenic on the circulatory system is on the capillaries, especially of the gastro-intestinal tract. Such effect does not conform to the myeloid damage found in the reported cases of neo-arsphenamine poisoning.

The picture is much more that of benzol poisoning. Thus it is well known that benzol

may affect myeloid hematopoiesis, and Piney⁵ states that under certain circumstances this effect may be limited to the thrombocytopoiesis; he quotes Duke's experiments with benzol poisoning where the platelets practically disappeared from the blood, while the leukocytes and red cells were not altered in numbers. The clinical manifestations of this myeloid damage by benzol closely resemble the hemorrhagic diathesis produced by neo-arsphenamine. Thus Frank,³ in Schittenhelm's handbook, reports a case of benzol poisoning, which fits perfectly into the series of hemorrhagic diatheses after neo-arsphenamine.

As far as our evidence goes we may then conclude that development of a hemorrhagic diathesis after neo-arsphenamine is due to the toxic effect of benzol on the myeloid hematopoietic system and that syphilis or arsenic are not proven to play any part in this condition.

Reference to other cases may be found in Combe's paper and in Hirschfeld's article in Schittenhelm's handbook⁶. Two additional cases have recently been published by Maderna⁷ and by Louste, Ducourtioux and Lotte⁸.

REFERENCES

1. Combes: Arch. Dermat. and Syph. 15:194, 1927.
2. Morton Smith: Arch. Dermat. and Syph. 11:237, 1925.
3. Frank: Schittenhelm's Handbuch der Krankheiten des Blutes und der Blutbildenden Organe, Vol. II, Julius Springer. Berlin, 1925.
4. Moore and Keidel: Arch. Dermat. and Syph. 4:169, 1921.
5. Piney: Recent advances in hematology: Churchill, London, 1927.
6. Hirschfeld: Schittenhelm's Handbuch der Krankheiten des Blutes und der Blutbildenden Organe. Vol. I. Julius Springer. Berlin, 1925.
7. Maderna: La Riforma Medica, 43:704, 1927.
8. Louste, Ducourtioux and Lotte: Bull. Soc. Franc. de dermat. et Syph. 33:636, 1926.

SENSE OF HEARING SURVEY OF SCHOOL CHILDREN IN FERGUS FALLS

W. L. BURNAP, M.D.
Fergus Falls, Minnesota

WHEN given an opportunity to present a paper before this great society my first feeling was that one of such poor attainments is not justified in occupying time which could be used so profitably by distinguished members, who, in research and practice, have added so much to our knowledge, who each year in solving mysteries are making plain the road on which we of the rank and file may safely travel. Who of us are not filled with pride and humility that there is no society in the world today contributing so much to medical knowledge as the Minnesota State Medical Association, and besides this there is none doing more towards solving the problems of the relations of the physician to the public.

In view of these facts the importance of the subject alone justifies my appearance. The tragedy of poor hearing is sufficient reason for its consideration anywhere and any time there is material to contribute.

Dr. Wendell C. Phillips (past president of the American Medical Association) has said, "Every handicap in human experience has its psychological bearing, every calamity its woes, but none except obvious fatal diseases provokes more despair, hopelessness and depression than defective hearing."

The tragedy of lost vision, after the first shock has been eased by time, leaves the victim cheerful and full of hope, but when hearing is gone, hope and cheer depart forever.

I am glad, therefore, to follow the lead of the men who are unselfishly giving of their valuable time and talents advancing the idea that the cure of deafness is in prevention and that the practical road to prevention is the regular systematic examination of hearing in school children.

On account of the widespread impression that nothing can be done for the prevention and cure of defective hearing, from the time the baby's acute otitis media is called indigestion, colic, flu, or worms, to the time he secures an artificial drum or ear trumpet through the local drug

store, the care of his priceless ears has usually been neglected.

Pediatricians have rendered a great service in calling attention to the frequency of silent ear infections as a cause of fever and debility of obscure origin, and the importance of early recognition to avoid permanent injury to the body structures, including the ears. The over-anxious may occasionally needlessly puncture a drum or enter an innocent sinus but the serious mistakes are on the side of omission.

Drs. Patton and Duprey of New Orleans, in a recent article on "Deafness and Its Prevention" make a plea for a more frequent performance of tympanotomy, emphasizing the fact that it is the large group of cases in which there is a subsidence of symptoms but with fluid remaining in the cavity that most often results in permanent injury.

There is a general impression that in draining the middle ear the conducting apparatus only is saved. Frances P. Emerson of Boston says, "After many years of observation I believe that the etiology as outlined is applicable to every type of chronic progressive deafness and there is no way of differentiating between so-called perception and conduction deafness as the perception apparatus is involved from the first in all cases."

It is not only infections that involve the middle ear that may cause damage. James Leyda in writing on deafness in children says, "It is a common clinical experience to have a patient with active sinusitis complain of fullness in the ears with diminished hearing and also common to have it disappear after treatment."

Until the development of the audiometer, the examination of a large group of individuals required so much time and was complicated by so many conflicting results that it was not undertaken. The examination of two or three hundred was about the limit. Now in Minneapolis alone 30,000 children are annually examined.

The audiometer was designed by the Bell Telephone Laboratories, Inc., for the Western Elec-

tric to give their engineers an accurate, practical method of determining the capacity and requirements of the human ear. The machines designed not only met their needs but have rendered otology an immense service. The 4-A audiometer, by the use of ear phones, makes it possible to test forty people at once, or at the rate of more than one hundred per hour. The findings, however, must be carefully interpreted.

Some, who on the first test show defects, may not have either temporary or permanent loss of hearing. These errors may be due to improper adjusting of the ear phones, extraneous noises, diverting influences or the inability to write to dictation. Therefore those who fall below a predetermined standard are retested, once or twice in groups, and finally individually.

On the other hand those found normal are for the time being eliminated because it is impossible for one with faulty hearing to write a perfect paper.

Dr. Horace Newhart was one of the first to secure from the Bell Telephone Laboratories a 4-A audiometer in the developmental stage and apply it systematically to the testing of the hearing in school children. As a result of his work, Minneapolis was the first city in the world to officially institute the regular testing of school children's hearing by means of the audiometer. Since this initial venture more than two years ago over fifty cities have fallen in line and others are coming in rapidly.

Dr. Newhart has said, "The possibility of accurately and rapidly examining simultaneously forty pupils with the Western Electric 4-A audiometer marks a new era in otology. The regular examination with this instrument is the initial step in an effective practical effort to conserve the hearing and it is the duty of all public schools to institute it."

It was through Dr. Newhart's help that we secured a 4-A audiometer for use in making the survey of school children in Fergus Falls. Dr. Newhart came to Fergus Falls bringing two assistants and devoted a day and two nights instituting the work which we carried through. It gives me great pleasure also to acknowledge the wonderful cooperation given by Supt. Lippett, the School Board, the teaching staff, all the doctors and particularly Miss Lunde, our school nurse, who was tireless in her service, devoting many hours of many days arranging groups, cor-

recting papers and tabulating results. Though the 4-A audiometer makes it possible to make ear tests forty times more rapidly than other means, still, when the entire school population down to the second grade is to be examined, many pupils two, three and even four times, a great deal of work must be done and the routine of the schools considerably disturbed. The group plan is not practical below the third grade, as these children are unable to write to dictation.

Total number of pupils tested.....	1,525
Those having a loss of hearing in excess of six sensation units in one or both ears, two or more tests, were....	113
Those having a loss of hearing in excess of six sensation units in one or both ears, on one test only, were.....	25
Total	138

These 138 were tested individually with the 3-A audiometer and 23 eliminated as not having sufficient loss of hearing to warrant further examination. One hundred fifteen is a little less than 8 per cent of the total examinations, giving about the same per cent of defectives as found in Minneapolis and other cities.

On the whole the findings of the two audiometers corresponded well. One must always bear in mind that it is possible for a child's hearing to vary considerably on different occasions, especially if there be pathology present causing at times congestion with closing of the eustachian tube. The following notice was mailed to the parents of 115 with defective hearing:

Dear Parent:

It was found when the ear tests were made in school that has a defect in hearing.

Realizing that poor hearing is one of the greatest handicaps one can have, and that many, if cared for in youth, can be relieved, Fergus Falls schools are taking the lead among the smaller cities in these examinations.

All the doctors in town who do this special work are coöperating with us and have agreed, during the next ten days or up to May 4, to examine, free, for the defect, and determine whether it can be remedied. The tests at school were not given under ideal conditions, and we are anxious to have these examinations made.

Will you not assist in this work by promptly sending to one of the doctors doing ear work for further examination.

Kindly take this notice to the doctor, have it signed by him and return it to the school.

.....
Doctor's diagnosis.

I wish again to acknowledge the coöperation of the doctors in making these examinations, particularly Drs. Paulson, Combacker, Freeborn, and Kittelson.

Only forty or a little over a third of those given the notice have thus far gone to a doctor's office for further examination. This would seem to indicate that the public requires considerable educating.

The findings in the forty are as follows:

- 14, or 35 per cent, require removal of tonsils and adenoids.
- 7, or 17 per cent, require further observation.
- 3, or 7.5 per cent, the external auditory canals were obstructed by wax.
- 4, or 10 per cent, the poor hearing is due to internal ear defect. No suggestions given as to remedy.
- 1, or 17 per cent, have had in the past or still have a running ear.
- 8, or 20 per cent, no pathology discovered. With the office tests, ears are normal or nearly so.

CONCLUSIONS

1. Our findings indicate that over a third of the children with poor hearing have disease processes present, the removal of which should wholly or partially remedy the defect, while others have permanent injury which could have been prevented.

2. The audiometer is a rapid, accurate and convenient instrument for determining hearing acuity.

3. About 8 per cent of the school children in Minnesota above the second grade have defects in hearing greater than six sensation units. This conclusion is based upon surveys in Minneapolis, Fergus Falls and two other points where partial surveys have been made.

4. Defective hearing is one of the greatest calamities of life. Hope lies in the detection in early life of beginning defects and prompt institution of proper remedial measures. These remedies are not limited to the removal of tonsils and adenoids.

5. The resolution first adopted by the section on Laryngology, Otology, and Rhinology of the American Medical Association and later by the House of Delegates and many other important organizations is very timely.

"Recognizing the fact that the most effective means

for the prevention of deafness consists in the early detection of hearing impairment, thereby giving opportunity for prompt removal of contributing causes, and believing it to be one of the important functions of our public school authorities to safeguard the integrity of the special sense organs as well as the general health of the school child, be it Resolved:

"That we heartily favor the provision by our public school authorities for regular periodic examinations of the hearing acuity of all public school children, such examinations to be adequate to detect even slight degrees of hearing loss."

DISCUSSION

DR. HORACE NEWHART (Minneapolis): I wish to emphasize one or two points which Dr. Burnap did not have time to bring out in his admirable paper. He is to be congratulated on being the pioneer in his own community to initiate a service which is being urgently demanded in many parts of the country not only by the hard of hearing themselves, who want others to be saved from their handicap, but most recently by members of parent-teacher associations, by social workers and others wherever the possibilities of preventing deafness by the early detection of heretofore overlooked hearing loss has become known. The subject is still so new that few people even among the medical profession have more than a very superficial knowledge of its importance.

The two points I wish to make are these: First, the actual work involved in the prevention of deafness lies in the field of preventive medicine and as such should be handled by medical men and not be allowed to fall into the hands of other people who are less worthy to carry it on. The obvious suggestion is that we in our home communities take the initiative in introducing the periodic examination of the hearing of our school children.

Eighty communities, chiefly our larger cities, have already introduced the system of periodic hearing tests. The work is more needed, however, in rural districts and smaller cities, where we have not made the advance in school hygiene that we have among our urban school population. Within a very few years the question of adopting it will come up for consideration and be generally demanded. I believe it is the duty, in fact the privilege, of the medical men everywhere to foster and encourage this particular work.

Replying to the question of expense I would say that in larger cities the cost is nominal and it is more than compensated by the saving effected in reducing the number of repeaters, many of whom are retarded as the result of overlooked hearing loss. In the country or in smaller towns several communities can advantageously join in the purchase of the needed equipment, reducing the cost to the minimum. In a community the size of Minneapolis the needed instruments cost eight hundred to a thousand dollars. The smaller outfit for individual testing, one of which is employed by the University of Minnesota, costs two hundred and eighty dollars.

TREATMENT OF ACUTE OTITIS MEDIA IN INFANTS AND CHILDREN*

C. WALTER RUMPF, M.D.
Faribault, Minnesota

CONFRONTED daily with fretful, feverish little children, I ask first to look at their ears. Therefore, I make no apologies for a subject which may seem commonplace, because in a majority of instances these little ones are suffering from acute upper respiratory tract infections, complicated by otitis media; and, for one, I have acquired a profound respect for the inevitability in some degree of this sequence. As general practitioners, the most frequent and important single condition with which we have to deal is acute upper respiratory infection in infants and children and otitis media the most frequent and important complication of this infection. You may object that this field belongs properly to the specialist, but in practice he sees few of these acute ears. These little patients must be cared for in their homes, their sufferings promptly relieved, and their general disease treated. The early recognition and adequate treatment, therefore, of acute otitis media in infancy and childhood is in the hands of the general man, and to him I address my plea.

The experience forming the basis for this short discussion is taken from over two hundred cases of acute otitis media in infants and children, ranging in age from two days to twelve years. Paracentesis of one or both drums was performed and treatment supervised. I have considered only the acute middle ear infections because the complications, the chronic ears, the defeats pass on to the otologist with the same deference with which the obstetrical calamities pass on to the gynecologist.

We may divide acute middle ear diseases into three groups: catarrhal, serous and purulent. These may, and do, run without sharp demarcation from the one to the other, in all grades of severity; and when it comes to treatment, it is not only a mistake but an impossibility to stand upon distinctions too sharply. In the catarrhal form there is a depression of hearing with a sense of fullness. Upon examination the drum head is retracted, the light reflex gone and a

transudate of serum may be visible. There is little pain. Either the inflammation clears up with relief of the naso-pharyngitis or it goes on to the second stage of acute serous otitis media. Here we have actual bacterial invasion of the tympanic mucous membrane with swelling, reddening and formation of serous exudate which fills the cavity. Pain and general symptoms are acute. The drum head becomes hyperemic, the light reflex disappears, landmarks are obliterated. Hyperemia changes to dulness. Vesicles appear on the drum head or in the canal, especially in the influenzal infection. And lastly, we have the third group, purulent or suppurative otitis media, seen so frequently in the exanthemata, although often the terminal stage in the otitis media of respiratory infections. Here the mucous membrane becomes deeply infiltrated, perhaps ulcerative, involving all the middle ear structures. The contents vary from muco-purulent to purulent. The drum presents all the characteristics of the previous type but with more formidable severity. Hyperemia has given way to a dull gray, angry, pulsating drum head covered often with exudate. Pain and general symptoms are intensely acute and unrelieved by ordinary measures.

In what way, then, does otitis media in infancy and childhood differ from that in adults, and form a separate entity in diagnosis and treatment? In the first place, the peculiar anatomy of the eustachian tube in childhood invites infection. The tube is a short, almost straight, with poorly developed musculature, and the pharyngeal lumen widely patent at the level of the hard palate. This favors the entrance of infectious material by coughing, vomiting and by the inability of the child to keep its naso-pharynx free from secretion. Embryologically an interesting point might also be mentioned; namely, that one must bear in mind the analogy between the embryonal development of the eustachian tube and the upper respiratory tract as a whole. Here we find selective bacterial attacks on similar tissues, especially tissues undergoing rapid development, with the result that the infections are more severe and the coincidence of the two

*Presented at the annual meeting of the Minnesota State Medical Association, St. Paul, May 15, 1929.

infections the rule rather than the exception. The external auditory canal is very short and small and is, in the newborn, in reality only a cleft. A true cartilaginous portion develops with increasing age. This makes examination tedious and difficult and calls for infinite skill and patience in cleansing these canals of debris preparatory to examination. After fussing for many minutes with a roaring prodigy I can understand how an acute ear is often overlooked from sheer exhaustion. Even the manipulation itself may cause a temporary congestion of the drum, but it is of utmost importance to see the drum in its entirety in order to evaluate the degree of inflammation in the child's middle ear.

The drum itself has characteristics which distinguish it from the adult condition. The angle is more acute the younger the subject, the process less prominent. The cone of light is variable and scarcely visible in young infants. The drum is dull gray, with little sheen on the surface as in the adult. The membrane is thicker, tougher and less transparent, so that a fluid level is almost always missed. The practical importance of these physical factors operating to make inflammatory processes of more serious import in childhood cannot be stressed too strongly. By reason of them, bulging of the drum is much less marked than in the adults and excessive mucous membrane swelling often resembles bulging. There is a partial relief of pressure by discharge of fluid through the short eustachian tube into the throat, contributing to the deceptive appearance of the bulging drum. Spontaneous perforation is therefore more infrequent in children than one realizes and a smouldering focus remains, if this fact is not appreciated. Only too significantly is this brought out by the post-mortem findings by many observers of purulent otitis media in a majority of infants and young children dying from all causes. Frequently it was undiagnosed during life. One series showed gross purulent infection in 80 per cent, and in half of these the drums were intact.

The symptoms of the otitis media in infants and young children are so unreliable as to be of very little diagnostic help to us. They comprise any or all of the symptoms of acute infection. There may be gastro-intestinal disturbance, vomiting, refusal of food. Irritability, sleeplessness, crying, especially when nursing or eating, or usually prominent. In fact, a restless, crying in-

fant, unrelieved by ordinary means, must be shown not to have otitis media. Fever is usually present and may be very high, with resulting nervous manifestations up to convulsions. Subnormal temperature is not uncommon and often defeats diagnosis. I would go so far as to say that unexplained fever in infancy is a presumptive otitis media until proven otherwise. Pain is necessarily a variable symptom and localization impossible in these little patients. A child may pull at its ear, but usually the wrong one. They will often lie on the affected side or find comfort when held against the mother on that side. Grandmother will always venture the opinion that it is teeth, but it is disconcerting to find how many ectopic teeth are found by careful otoscopic examination. More tragedies are committed in the name of teeth and most premature dentitions are relieved by paracentesis of the tympanic membrane involved. In other words, you cannot rely on symptoms when a child's ears are in question. The physical appearance of that drum at the convergent end of an electrically lighted otoscope is our only justifiable criterion. There are no laboratory aids.

Peculiar to infants, I wish to stress also a type known as otitis media neonatorum. You will recall that at birth the tympanum is filled with a gelatinous substance together with myxomatous tissue. Added to this is frequently a mixture of prenatal fluids, meconium, etc. Occasionally infection supervenes and we are presented with a crying, restless newborn, often with high fever and markedly dehydrated. Do not neglect the ear drums in these cases. Prompt relief follows paracentesis. I have encountered four in this group studied, and two had been diagnosed simply dehydration fever.

Our diagnosis, therefore, of acute middle ear infection thus established we must outline a rational approach to treatment. There is still a strong popular prejudice against paracentesis of the ear drum. Education of the mothers to combat the fallacy that opening of the drum will cause impaired hearing should be the mission of all of us. In our prophylaxis of deafness campaign we should stress this bit of truth: that early careful paracentesis is our most logical weapon in prompt and sure prevention of abnormal hearing after infection of the middle ear. And further, of equal and compelling importance to be stressed is the speedy relief from intense

suffering which paracentesis affords. I have had this brought home on more than one occasion when these little patients who have had previous experience with ear infection have asked their mothers wistfully to please call the doctor so that he might open the ear and get relief from the agonizing pain.

In our treatment, remember that numerous physical factors combine to make examination difficult, and evaluation of the degree of inflammation unreliable. Familiarity with the peculiarities of the disease in infancy and childhood is the necessary supplement to your experience. If seen early, I give the case a trial of five per cent phenol and ichthyol in glycerine, administer a salicylate, apply radiant heat, and watch the ears daily. If the inflammatory reaction and symptoms do not promptly subside, I perform paracentesis of the drum. To wait for spontaneous perforation of the ear drum is to invite disaster. I have seen physicians stand by reassuringly waiting for the drum to break as if it were a bag of water, while the poor little patient suffers agony. As Tribble says, "Delay is in opposition to the oldest sound surgical law which demands that confirmed pus shall be evacuated." It is far better to err on the side of safety and open a few beginning serous ears than to delay until pus has formed and done its damage. When we are greeted by pus in the canal we have come too late; the entire mucous membrane has been broken down and infection has permeated the entire middle ear structure. Spontaneous perforation is seldom sufficient to give adequate drainage and incision properly performed is practically without risk and has everything in its favor.

The question of paracentesis is not always easy to decide, but when in doubt, open. The most dangerous case is often the most puzzling and this simple procedure will confirm your suspicion. I can find no argument designed to show the dangers of paracentesis which outweighs the danger of unrelieved purulency. I always open a frankly bulging drum. I always open a pulsating drum, a drum covered with exudate, a drum bulging in the superior portion especially, a drum with multiple bulging areas, a drum with increasing or stationary clinical symptoms, no matter how innocent it looks. It is far better, in my experience, to incise the drum in the serous stage before it has undergone frank purulency. The symptoms are relieved, recovery is more rapid,

the period of discharge shorter, and return of hearing promptly follows.

I reserve one exception in my uncompromising attitude toward a bulging drum-head and that is in the deeply injected, angry looking drum with slight bulging, in a fulminating general infection where the ear seems not the worst offender. Better a more somber finish to these drums before attempting paracentesis. You will set up a severe reaction, and there will be no relief from pain. Rather withdraw in good order for observation until nature has taken control of the situation. Don't misunderstand me, that all acute ears come to paracentesis. Many subside very kindly and you can tell by one or not more than two days of observation which will fall into this group. Pain subsides, but at the same time the hearing improves rather than remains impaired as in the bulging stationary imperforated drum. The landmarks reappear and bulging becomes less marked. I would emphasize the rapidity of this. But relief of pain symptoms alone is not a contra-indication to paracentesis, because only too frequently the tough drum has distended its limit and rupture does not take place. Pain leaves at this point and gives a sense of false security to the observer. Many errors arise from this apparent relief and the mother will object that the child has no pain and therefore is well, but the only safe guide is the stationary appearance of the drum head; and paracentesis, the urgent procedure.

A useful confirmatory method which I employ especially in infants is to touch the drum gently with my paracentesis knife to test its tympany. The drum without exudate gives a characteristic tense egg shell resistance as distinguished from the tough boggy resistance of the saturated drum head. And, to repeat, I cannot urge too strongly the value of paracentesis of an acute middle ear in an infant or a little child; paracentesis while in the relatively benign serous or prepurulent stage. The rapid uncomplicated recoveries have been in these cases; the harrowing postponed recoveries in those where delay and indecision "bring knowledge for which the use has passed."

To return, there is a syndrome of infection in infancy where simple paracentesis will not suffice, and the splendid work of Marriott has given us a method whereby these cases, if done early, may be saved. Since Hartman in 1894, this symptom-complex has been described of infants

suffering from severe gastro-intestinal disturbance and malnutrition associated with otitis media. Marriott found at autopsy that the mastoid antra in these infants contained virulent pus. And to quote him relative to this type of case he concludes that "in some instances recovery follows simple paracentesis, but in others, symptoms persist. It is in these cases that the infection has involved the mastoid antrum and has led to a swelling of the mucosa so that drainage of the middle ear fails to drain the antrum. When this occurs, the otologic evidence is a swelling or sag of the posterior superior canal wall, just external to the tympanic membrane. In most instances there is neither redness, swelling nor tenderness over the mastoid. Occasionally an opening made through the sag in the canal wall brings about sufficient drainage, but in the majority of instances it is necessary to resort to post-auricular drainage or antrotomy. This simple operation, performed under local anesthesia, establishes adequate drainage, and is in the majority of instances followed by extraordinary improvement in the general nutritional condition of these infants."

Having decided, therefore, upon paracentesis I have the child firmly held and swathed. No general anesthetic is given under three years of age and I am giving increasingly less over that age, because pain is only instantaneous. Bonains solution, consisting of equal parts of phenol, menthol and cocain, instilled into the canal, is helpful as a local anesthetic both to mother and child. I work from the head end of the child; that is, observe and operate upon the drum upside down. This approach permits you to restrain the head and affords greater safety in making the incision in the drum. Sterility in performing paracentesis is highly essential. I cleanse the ear canal with alcohol or hexylresorcinol and the speculum of the otoscope as well, because invariably with the infant-size speculum the knife will strike its sides. A curved incision in the posterior, inferior quadrant of the drum affords the best drainage. Keep in mind that the younger the infant the more acute is the angle of the drum and paracentesis more difficult. Sweeping the knife upward from your reverse position, the completion of the incision will be away from the drum, and when the inevitable lurch of the child's head takes place, the knife will be free in the canal and not in the vicinity of the ossicles where in-

jury may result. Take care, however, not to strike the canal, setting up a diffuse external otitis. Guard also against an incision which penetrates too deeply, injuring the sinus or the bulb below. Paracentesis of the infant drum calls for a delicate bit of minor surgical skill.

I have found that even large openings in the infant's drum tend to close before drainage is complete, and repeated incision is frequently necessary. Partial relief of pressure through the nasopharynx operates to cause this annoying complication. Do not hesitate to reopen these drums until clinical symptoms have subsided and the drum head appears normal. The possible formation of scar tissue on the drum, with resulting impairment of hearing from repeated incision, is negligible in infancy. Pulsation of the released fluid is almost the rule. Relief of pain is usually instantaneous although before each evacuation of accumulated secretion the child may complain of pain and cry. The fever generally falls without delay, although I have seen it persist for days where no complication could be determined or other focus demonstrated. Lillie calls our attention to the cases where septic temperature continues after paracentesis and urges the search for foci such as pyelitis and central pneumonia, and not necessarily for the dangerous local extensions of the otitis media.

As to the after-treatment, cleanliness is the first and last essential. Wipe out the ears frequently with dry sterile cotton on applicators. A gauze wick may be carefully inserted in the older patients. Instruct the mothers to wipe out the ears carefully and thoroughly. There is practically no danger of their going too deep because of their innate fear of doing so. I do not irrigate a discharging ear with any solution. I am confident that it increases the purulency of the discharge and inhibits healing of the drum.

The most effective auxiliary treatment has been the use of radiant heat. Gerstenberger has reported a series of gratifying results using the method described by Oeken of radiant heat from a high powered nitrogen bulb. Oeken originally employed this method in aborting the catarrhal ear to avoid paracentesis. I have used this in numerous cases with good results. More particularly is it useful in discharging ears. As is generally known, radiant heat relieves pain more effectively than any other agent. It brings about a local hyperemia, is bactericidal, and very pene-

trating. The discharge fairly pours out under the heat, the child relaxes and goes to sleep. The lamps which I employ are the Thermolite with a three hundred and sixty watt nitrogen bulb and the carbon arc or zoalite. They are left on for thirty minutes twice a day, or more frequently if desirable. In older children I employ, in addition, the quartz light with ear applicator with more rapid results. In debilitated infants, general radiation with the quartz light builds up their resistance very effectively with a shortening of the draining period. I cannot be too emphatic about the value of radiant heat in relieving pain in otitis media and rapidly clearing up a discharging ear.

Work has been done recently with specific antiseptics introduced into the ear. Smith of Boston has made an extensive study with the following results. He has found that sodium-hydroxymercuribenzenesulphonate in one half per cent solution washed back and forth in the ear destroys gram-negative bacteria (*Bacillus coli*); and that gentian violet is bactericidal for gram-positive organisms (staphylococcus, diphtheria and pneumococcus). Further, that 2 per cent acetic acid destroys pyocyanus, and neutral acriflavine is most effective in streptococcus infection, but least satisfactory. He concludes that by utilizing the selective bactericidal properties of these solutions and alternating them, he can clear up his cases in an average of two weeks sooner than by the older methods. I have employed these solutions and recently, in addition, hexylresorcinol solution, in the discharges which did not rapidly clear up and I find them effective in many instances. This treatment is difficult to supervise in the home except with intelligent coöperation.

It is essential in treatment not to neglect the child as a whole. Insist on keeping these little ones in bed during the early days of the discharge and your recovery will be more rapid. I treat the upper respiratory tract infection by instilling into the nose a solution of 10 per cent neosilvol either alone or combined with 2 per cent ephedrine. This is highly important when one appreciates that paranasal sinus disease almost invariably accompanies acute otitis media in infants and children (Lierle), and persistence of discharge is often dependent on this association. Clear up the upper respiratory infection and the middle ear complication will be short-

lived under proper treatment. Adenoid infection must be watched carefully and surgical interference advised in discharges which do not respond to local therapy. And finally, it is a part of duty to these children to test their hearing for several weeks after acute middle ear invasion, in order to detect early a possible residual catarrhal deafness.

Results: In over two hundred cases of acute purulent otitis media treated, the average duration of discharge was sixteen days. Three patients developed acute mastoiditis, were operated upon, and recovered. No chronic discharging ears resulted in this series and there were no other complications. Three patients with ears discharging over six weeks had undoubted mastoid involvement but in the absence of external signs were not operated upon and recovered without damage to their hearing.

SUMMARY

Two hundred cases of acute purulent otitis media in infants and children, in which paracentesis of one or both ears was performed, were studied with special reference to the results of treatment.

Otitis media is the most frequent and important complication of acute upper respiratory tract infections in infancy and childhood and has distinct characteristics which make it an entity apart from the same disease in adults.

Otitis media is the most frequent and urgent cause of fever, fretfulness and certain gastrointestinal disturbances in infancy and childhood and should be diagnosed early and accurately.

Otitis media neonatorum is a frequent cause of fever and crying in the first few days of life.

Prompt paracentesis in the serous stage is sound surgically, gives early relief of symptoms, and best promise for rapid and uncomplicated recovery.

Radiant heat is the most effective physical agent in treatment.

Cleanliness and dry wiping is an advance over irrigation of discharging ears.

Specific dye therapy offers promise of more rapid clearing up of infection.

Otitis media is a manifestation of a general infection which must be alleviated primarily.

Prophylaxis of deafness must begin with in-

telligent treatment of the source—acute middle ear suppuration.

REFERENCES

- Abts: Pediatrics. W. B. Saunders Co., 8:267.
 Babcock, E. S.: Otitis media in infants. Arch. Ped., 1927, 44:508.
 Clinical Pediatrics. D. Appleton & Co., 9:38.
 Dean, L. W.: Otitis media in infants. Arch. Otol., Rhinol. and Laryngol., 1927, 6:201.
 Drury, D. W.: Infantile otitis media. Bos. Med. and Surg. Jour., 1926, 194:96.
 Gallaway, L. M.: Otitis media in infancy. Jour. Kan. City Med. Soc., 1927, 27:335.
 Gerstenberger, H. J.: Use of radiant heat in treatment of otitis media. Am. Jour. Dis. of Child., 1922, 24:320.
 Goldsmith, P. G.: Infections of middle ear tract. Proc. Interstate Post-grad. Med. Assn., 1926.
 Kopetzky, S. J.: Otolologic Surgery. Paul Hoeber, 1925, 1:92.
 Lierle, D. M.: Otitis media in infants. Ann. Otol., Rhinol. and Laryngol., 1927, 36:604.
 Lillie, Harold: Ann. Otol., Rhinol. and Laryngol., 1922, 20.
 Marriott, McKim: Pediatric aspects of Otolaryngology. Ann. Otol., Rhinol. and Laryngol., 1927, 36:686.
 Oeken, W.: Quoted from Gerstenberger, *ibid*.
 Smith, D. T.: Causes and treatment of otitis media. Am. Jour. Dis. Child., 1924, 28:1-15.
 Triple, G. B.: Surgical treatment of otitis media in children. U. S. Naval Med. Bul., 1925, 23:362.

WHERE DO PEOPLE DIE?

Workers in the field of public health and particularly those concerned with the broad aspects of the hospital problem, will be interested in an article by Dr. J. V. DePorte, Director of the Division of Vital Statistics, entitled "Where do People Die—at Home or in Hospitals?" published in the August, 1929, issue of *The Modern Hospital*.

A survey of the more prevalent forms of sickness in certain districts of rural New York which was recently carried out by the State Department of Health, indicated that each year there occur in the country as a whole more than 125,000,000 cases of illness, with a quarter of a billion as not an impossible estimate. The mortality in the entire country in 1927, based on the number recorded in the registration area, was approximately 1,360,000. This gives an average of from 100 to 200 cases of sickness for each death. The growing recognition of this fact by organized public opinion manifests itself in diverse ways, among which the development and increase of hospital facilities are outstanding. According to the latest figures, in the course of the twenty-year period, 1909-1928, the number of beds in hospitals of various types in this country more than doubled—from 421,065 to 892,934—while in the same interval the population increased by 30 per cent.

The necessary information on the prevalence of sickness in sufficiently large areas not being available, the New York State Department of Health approached the analysis of the hospital situation from the less satisfactory but more practicable angle of recorded mortality.

Comprehensive tables, based on the returns for 1926, show that out of the 75,268 deaths in the State, exclusive of New York City, 52,885 occurred in private dwellings and 22,383 in state and private institutions.

Of 1,000 institutional deaths, 642 were recorded in general, special and surgical hospitals, 149 in state institutions for insane, 76 in county and city homes and almshouses and 59 in tuberculosis hospitals and sanatoria.

The percentage of deaths recorded in institutions was greatest from puerperal diseases and least from diseases of the circulatory system. In the group of general hospitals, 52 per cent of deaths were of persons over forty-five years of age and 15 per cent over seventy, while in tuberculosis hospitals and sanatoria, three-quarters of all deaths were of persons under forty-five years of age.

An analysis of the mortality in the State, exclusive of New York City, according to the general nativity of the decedent shows that the proportion of foreign-born persons who died in institutions—33.1 per cent—was higher than the corresponding proportion of native-born—28.5 per cent. In general hospitals the percentages for these two groups of the population were identical, 19.0 per cent. The proportion of foreign-born was higher in institutions for the feeble-minded and the insane, being 6.3 per cent as against 3.8 per cent native-born; in county and city homes, the foreign-born registered 2.8 per cent and native-born 2.0 per cent; in tuberculosis hospitals and sanatoria foreign-born 2.2 per cent and native-born 1.6 per cent. In maternity hospitals and infant homes, however, it was found that deaths of native-born represented 95.5 per cent of the total. In this connection we may say that the unlike age composition of these two groups of the general population in all probability accounts for most if not all of the differences shown above.

The results of this study, it is hoped, will give some measure of the extent to which hospital facilities meet the needs of the people.—*Health News*, Sept. 30, 1929.

THE GENERAL HOSPITAL AND TUBERCULOSIS*

HELEN H. HIELSCHER, M.D.

Mankato, Minnesota

A DISEASE such as tuberculosis that we know so much about should be controllable. The profession says it is controllable, but as a matter of fact we are not controlling it. This is said with a full knowledge of the statistics from which descending graphic waves are manufactured. These are based on the death rate. What we want to see is a decline in the incidence of the disease. That medical science is able to coax and coddle the victims of tuberculosis into a few more years of existence is encouraging but it is hardly an end in itself. The history of the struggle against tuberculosis is within the memory of most of us. It has been a brave and gallant fight, but it must be accounted still a drawn battle.

In all medical reforms the doctor has three great forces to contend with: doubt in his own methods that are not yet proved; the static condition of the mind of the masses; and the active opposition of those whose private interests might suffer from the change.

Our present method for the care of tuberculosis was conceived in the panic that followed the discovery of the almost universal distribution of the germ of the infection, and nurtured in the previously accepted belief that it was extremely infectious, tediously chronic and always fatal.

In the studies of the disease in the new day, that is to say in the light of Koch's discovery, our first revelation was that it was not always fatal. No classic treatment was developed, however, and the debacle of tuberculin as a cure was not enough to destroy hope that there was still a safe, easy and sure cure forthcoming. Many fakery flourished about this time and some of them are with us even to this day.

One legitimate plan did arise from the chaos of that time, and that was the removal of the patient to a milder climate. This plan pleased everybody. It relieved the doctor of a case that he did not know very well what to do with; it took the patient out of the home, where even his nearest and dearest were learning to fear him;

and it gave him hope, which in itself is a very good medicine.

The results would have been very good indeed if only those with a fighting chance were allowed to go, and if they had been provided with means to live comfortably and secure medical advice; but the hopeful and the hopeless cases, those with means and those without means, rushed to a strange land and tried to live and recover under conditions they would hardly have survived in health.

The second revelation was that cures were actually being made in the milder climates where the patient was supplied with rest, fresh air and nourishing food. This soon raised the question: was it not possible to have all of these things at home and perhaps in a greater abundance? There was fresh air and good food in every state in the Union. This was the thought that brought about the period of state and county sanatoria. We need not refer to the quaint conceit that these essentials for recovery must be administered in conjunction with the healing influence of the northern pine. I mention it here because these and other fads brought about the building of sanatoria awkwardly distant from the centers of population and the open market. This accounts for the location of our own state sanatorium, euphoniously called Ah-Gwah-Ching. In other states the fresh air complex drove them to the desert, where they fed their patients triumphantly on condensed milk and canned meat.

The work of building sanatoria was greatly impeded by those who still held that the change of climate was essential. The argument was largely led by those states that were anxious to capitalize on their sunshine and by men who had acquired some little notoriety as the heads of large institutions where the competition was not very marked. "By the streams of Ruben great was the debate," but it had very little to do with the battle against disease.

Immediately after the Great War the milder climate plan received a great impetus, not indeed through the medical profession, for how-

*Presented before the Lymanhurst Medical Staff, Minneapolis, March 26, 1929.

ever strange it may appear, the United States, with perhaps the largest and best equipped and best organized medical body in the world, put the care of the sick and disabled of the war in the hands of laymen who, in the name of that thing that seems to be more sacred to the people than the name of God Himself, economy, hired the medical attendants in the cheapest market.

Public opinion slowly recovered from the propaganda, backed by the government, that filled such places as Whipple Barracks and Fort Bayard with men from Minnesota, Montana and the two Dakotas who died of the hardships of transportation or the terrific change of altitude, both of these places being over a mile above the sea level.

The next revelation was that tuberculosis was not nearly so infectious as was supposed. In fact there are many now who believe that the healthy adult is almost immune. This has been demonstrated again and again in the marriage of the tuberculous and the non-tuberculous, where the non-tuberculous seldom comes down with the disease. It is not unusual to see the wife, after the death of her tuberculous husband, live and retain her health, while she loses, one by one, the children who were exposed to the disease during the life of their father, or the healthy husband surviving his tuberculous wife and children.

On the other hand, the susceptibility of the child is very high. The degree of fatality is not well known for it is only in late years that a doctor would dare the scoffs of the profession by reporting the death of a child from pulmonary tuberculosis. We do know that in many cases the vital forces of the child are so strong that they establish a "health balance" against the disease. We also know that this health balance can be upset by such affections as influenza or pneumonia or great physical strain. It seems from recent statistics that this breaking down of the health balance is becoming very frequent in girls of the high school age. This may be accounted for by their efforts to indulge in the sports of their brothers notwithstanding the handicap of the menses, the strain of the high school work and the social obligations that seem to complicate the school course at the present time. The records of the war show that the health balance

broke with tragic frequency when the young boys were subjected to the strain of intensive training in camp. They developed fever after a few days strenuous work and in three weeks were dead of cerebrospinal meningitis or other tuberculous manifestations. The child as the host of the disease and carrying it on to the next generation is a problem that must be reckoned with, though not of course the only problem, but its protection looms large in the prevention of tuberculosis.

This last revelation and especially the part that refers to the susceptibility of the child and the possibility of it carrying the disease in a quiescent state until the strain of hard physical labor, childbearing, or disease breaks down the health balance that has been established, and the adult again becomes a source of infection to his own or his neighbors' children, is the stop, look and listen sign of this day. The key to the situation is the protection of the child. The protection of the child envisions the care of the adult.

With this picture in our mind we can now look for the weak parts in our system of the care of the tuberculous. We are spending millions in this fight and thousands of men and women are devoting their lives to the work, and we have a fairly educated laity. Where is the break in the continuity of our endeavors that renders our efforts so futile?

The weakest part, I am fully assured, is in the gulf that lies between the patient and the doctor to whom the care of the tuberculous is now consigned by the profession at large. This doctor is hidden in the seclusion of the sanatorium. The only power on this earth that can bridge that gulf is the family physician. The first, most important and most difficult step in the management of any case is the diagnosis, and this diagnosis must be made early—not after the neighbors have made it, but early, when it requires skill and training to do it. Now what chance are we giving the family physician to acquire this skill and training. He is a human being, struggling along to support his family in decency. He has not even the advantage of a hospital in which to study the case. When he makes the diagnosis, if he does, the case passes out of his hands, and his remuneration for his hard work is not very great. People do not like to pay for what they don't want to hear. Do you blame the doctor

for turning his attention to something that will offer more credit and more remuneration?

This is an "impasse." The sanatoria get the patients only after the disease has progressed so far that a diagnosis could be made in just running by. A second difficulty rises from the reluctance of the patient to leave his home surroundings until the disease is so pronounced that he is afraid. A third difficulty is that hopeless cases are usually sent home or return home to die, and are in the house, often with small children, during the most dangerous period of the disease as far as the spread of infection is concerned.

The fourth difficulty is that the sanatoria are filled up with bed patients and have not room for the applicants and the result is a long waiting list. During this wait, more precious time is frittered away, and the patient's chance for recovery passes with every day.

There is one simple direct remedy, which would cure all of these conditions, for they are all dependent on the one false step that was taken in the early care of the disease:

Open up the general hospitals, which ignorance of the true nature of the disease, and panic, not law or reason, has closed against the tuberculous. Let the study of tuberculosis again become a vital matter with the family physician. Give him the advantages of a hospital in which to study his cases and to care for them as long as they are hospital patients. Give the patient the advantage of a general hospital for his surgical needs such as lung collapse, resection of ribs or phrenic nerve, etc.

Such work belongs to a hospital and sanatoria should not be burdened with it. Then when the patient has made the first lap of his

journey toward health, and when he is facing his long tedious recovery, he is a fit subject for the sanatorium, and the sanatorium should be fitted to meet this condition and not hospital conditions.

Empty the beds in the sanatoria of hospital patients and make room for the sanatorium patient and fill the empty beds in our hospitals with the patients that belong there. There is no doubt but that our state with an intelligent redistribution of the tuberculous could take care of them all competently without any further building program.

The effect of this action would be to revive the interest of the family physician, and to give us instead of a few thousand workers in the tuberculosis field a hundred thousand, and it would make the local physician what he was before he turned this work over to the sanatorium, the friend and adviser of the family that he serves; for in no condition is the doctor brought more close to the family than in the guidance and supervision of such patients.

As to the sanatoria, when this burden is lifted from them, they can enter the work that was their original purpose, the rehabilitation of the individual weakened by disease, and often rendered unfit to take up his previous occupation. This is a splendid field and a challenge to the best intelligence. As early as the fourth century we find that such rehabilitation work was carried on. Basil Bishop of Cæsarea in the hospital called the "New Town" from the number of its buildings gave us an example. Here the patients after their recovery were taught trades by which they might earn a livelihood, and there was a committee to make contact between them and those having work for them to do.

THE COST OF MEDICAL CARE

O. E. LOCKEN, M.D.
Crookston, Minnesota

THE cost of medical care from a rural aspect is very completely described by the following story:

Late one stormy night a physician was aroused from sleep by a farmer who lived several miles out in the country. The farmer, who had a reputation for being stingy, inquired how much the doctor charged for country calls.

"Three dollars," snapped the doctor, impatient that the fellow would bargain under such circumstances. Thereupon the farmer urged him to go to his home immediately. So the doctor dressed and drove to the farmer's house with as much speed as the muddy, slippery roads permitted. As soon as they stopped at the farmer's home, the farmer stepped out, and handed the doctor his three dollars.

"But where is my patient?" demanded the physician. "There 'aint none," answered the farmer, "but that damn livery man would have charged me five dollars to bring me out here tonight."

I think, as far as rural Minnesota is concerned, that summarizes the situation.

It is estimated that since the war medical fees have increased only 35 per cent, whereas the cost of living has increased 66 per cent. The physician, like the farmer, has not kept pace with the development of a profitable industrial world. The cost of medical care is not the price paid to the physician. The cost of scientific medical care, like the cost of agriculture, as far as the consumer is concerned, has increased wholly by virtue of an apparently necessary overhead. In medical service that means scientific diagnosis and treatment, hospitalization, nurses and technicians, laboratories and x-rays, medicine, serums, and physiotherapy. All of these make the bulk of the medical bill. The patient, however, is not interested in the details; he is interested only in the total. The income of the physician for medical services today is in exactly the same relation to the bill which the patient pays as the income of the farmer is to the bill which the consuming public pays for its foodstuffs. To reduce the overhead of the cost of scientific medicine is not as simple a task as the industrial world has found the reduction of costs, through mass production and distribution, by division of labor and organization. The human element of

life and health, of prevention and treatment of disease, cannot be standardized as simply as the commodities of a merchandising business world.

There never was a time when the cost of medical service has been before the public as it is today. First, free dispensaries and free hospitals, then pay beds on reduced rates in charity hospitals, then public pay clinics with under-cost rates supported by endowment or taxation, have each in turn focused our attention on the growing efforts to give scientific medical service to all of the people regardless of their financial status. The recent issue of medical ethics and lower costs of medical care fought in headlines and editorial pages of Chicago newspapers growing out of the methods of operation of the Public Health Institute, have brought a crystallization of ideas on the problem before us. Not taking time to argue the merits of that controversy, we are interested here only in the prevailing conclusions of the writers.

Quoting from the New York Times of April 21: "Is the socialization of health care to be intelligently and progressively developed, or is it to be checked by private physicians acting as an organized society for the protection of their professional privileges?"

Quoting from the Chicago Daily Journal of April 12: "Medical ethics doubtless will be adjusted by the profession to meet the new conditions. The health of a people is one of the prime objectives of civilization. An organized and methodical system whereby the best medical treatment is available to all who are ill must come eventually in this intelligent and progressive age. Society will shape its health program to suit its needs."

These are very strong statements coming from powerful newspapers. As expressions of prevailing public opinion they are based on two generally recognized criticisms of medical practice:

1. That scientific medicine is not available to the man of average income.
2. That there is a lag between the knowledge now in the possession of the medical profession and the application of that knowledge to the service of all the people.

A study by public health workers of the incidence of disease and death rates in various sections and communities gives a basis for reason-

ing that there would be now a saving of a half million lives annually in the United States without any further discoveries, if there was sufficient expenditures on the part of either the individual or the state, in the application of the present knowledge of prevention and treatment of disease to an equal standard in every part of the country. On the supposition that such a uniform standard of service is possible, the entire movement of Public Health is based.

The practice of medicine has been highly individualistic and the whole tendency of practice, with its personal relation between physician and patient, is to oppose the methods of organization typical of the modern business world. Ninety per cent of physicians are in single private practice and yet while there are only 147,000 physicians in the United States, there are more than 1,000,000 persons administering to the care of the sick. It is evident that there is in this individualistic profession a very high degree of organization, through hospitals, clinics, laboratories, public nursing, and administration. Organization in one form or another approaches the menacing cloud of state medicine. It is of interest to review what the state is now doing in this field. It provides our medical education; it regulates our medical practice; it controls a large bulk of hospital service; it supervises the entire field of contagious disease eradication. But more than that, the state cares for all the mentally defective by its public institutions, for practically all the tuberculous by its state and county sanatoria, for most of the orthopedic cases by its hospitals for crippled children. And each year brings a greater control of all accident cases under the direction of the Industrial Commission, and in the recent legislature we were but a step from having our fees for accident cases in industry specified by that body.

The lay workers and public health officials constantly declare that these activities are not sufficient, and so the frontier of public medical service is pushed out:

1. Great industrial concerns have organized complete health services for the purpose of caring for the workers in their plants. This has been followed by extending the privilege of making the services of the company doctor possible for the wife and children.

2. Trade unions and fraternal orders have provided the lodge doctor to care for all members of the order and their families on an annual fee

basis, and this service is used as a main argument to induce new members to join the organization.

3. The University, for teaching purposes, provided charity services in dispensary and hospitals, and are now extending rapidly the pay bed on a low rate scale to attract a larger clientele. It was only a single step to include the Student Health Service of complete medical care to 10,000 students on the campus, for the payment of a small annual fee.

4. Corporation Clinics such as the Cornell Pay Clinic of New York, backed by University funds, and the Public Health Institute of Chicago, backed by private individuals of wealth, have employed physicians on salaried whole or part time basis, to put scientific medicine within the financial reach of the so-called middle class of limited incomes.

These are examples of the gradual trend of experiments to organize medical practice for the purpose of reducing the cost of medical care to the patient, by providing for the payment of overhead by some other means than by the patient himself. The scope of this paper does not permit a discussion of the merits or defects of these public efforts to organize medical services on a low cost basis. The question of interest here is, what are the physicians of Minnesota doing to meet this challenge of the problem of the cost of medical care?

Minnesota is essentially a rural state and the great majority of its physicians are serving a rural people by private individualistic practice. It is generally estimated that 85 per cent of illness can be efficiently cared for by the general practitioner without the aid of expensive equipment or technical assistance. For that demand there is no particular problem. Minnesota physicians as general practitioners are giving an adequate service for a reasonable cost, at a figure that brings no more hardship to the middle class of moderate incomes than do any of the necessities of modern life. To pay for such service by cash or out of income on an installment basis is no more of a burden than the purchase of furniture, automobiles or radios, which these same people find easy to acquire.

What of the 15 per cent of disease which by its nature requires technical assistance for either diagnosis or treatment?

In rural Minnesota scattered every hundred miles, one finds small group clinics with staffs

of three to ten men, with trained technicians, with complete scientific equipment, giving medical service modeled after the great parent institution, The Mayo Clinic. Here you find the principle of organization, as laid down in modern business, specialization, division of labor and co-operation. Scientific medicine on a high plane through these group clinics is being brought to the reach of everyone. The cost of service has been reduced by cutting down the distance which the patient must travel, and by the fact that a group of men can afford to purchase all the equipment necessary, and to employ the technical assistants necessary for that service. The cost to the public of scientific medicine in rural districts has been reduced until it is no more of a burden than the general cost of living. One finds practically no complaint arising from these sources.

The third factor in medical care is the detached specialist in the smaller city and in the metropolitan centers. He has in the past not been generally available for the average man of small income chiefly by the excessive cost of reference to technical laboratories and to additional consultations which, added to the original specialist's examination, has made a burdensome total.

The latest effort to meet this problem is the organization of technical laboratories by coöperative control of a large number of physicians themselves, making possible greatly reduced charges for special technical laboratory procedures, x-ray services, and physiotherapy. A step further will change the construction of medical office buildings, where one waiting room and one office girl will supply the needs of ten or twenty individual physicians, eliminating expensive floor space, and a great number of office girls, who spend a fair share of their time now doing needlework, or reading light magazines. As the overhead goes down, the charge to the public will represent more nearly the net income of the physicians.

The fourth problem is the cost of hospitalization which with the great advance in technical demands has increased out of proportion to the cost of other branches of medical service. There seems to be no visible means to reduce the cost of doing business to the hospital management, which today as a rule is under most efficient supervision, equal to any business of like proportions.

Universities today give educational services to students at a rate of less than the costs covered by the income from tuition fees. The deficiency is made up by public taxation. The private college offers similar service on a similar basis, but the deficiency between the cost of service and tuition income is made up by endowments or annual grants from supporting church organizations. This course offers the only apparent solution to the cost of hospital service. Hospital rates, like tuition fees, can be no higher than the traffic can bear. If the rates are to come down and the services kept up to an increasingly higher standard, then the hospitals can do no charity work, and they must receive the balance of their needed income either through public taxation or from private endowment, exactly as public and private colleges are maintained.

In conclusion of this brief panorama of medical economics, permit me to emphatically declare that these steps in providing a superior scientific medical service by the private physician, working on his own responsibility, either individually or in groups, is immeasurably better than medical service coming out of Public Clinics with an all salaried profession, organized on a factory or department store principle. Socialized medical service will always fail to provide for the personal interest between patient and physician, will fail to provide a responsive flexible service for the acute case, for the night case, for the contagious case, for the chronic case of the laboring man, who is unable to take treatments during the usual working hours of the day.

The President of the United States has declared that government in business is a blight to the progress of business development. If this is an axiom of sound economics, how much more true it is that the public can expect an advancing medical service only in so far as there is maintained the initiative of the individual both in the patient and in the physician.

Minnesota can be proud of the fact that its medical profession is meeting the challenge of adjusting itself to modern conditions and is providing a superior service of scientific medical care at a cost within the reach of all its citizens.

REFERENCES

- Davis, Michael: *Clinics, Hospitals and Health Centers*, Harper, 1926.
Moore, H. H.: *American Medicine and the People's Health*, Appleton Co.

PRESIDENT'S LETTER



COUNTY MEDICAL SOCIETIES

MOST illuminating have been our visits to County Medical Societies. Upon their life and vitality depends the integrity of the parent organization. They must ever be the superstructure of the State Association. To them the State Association owes much. The interest displayed in up-to-date medical topics, the character of papers presented, the intelligent and interesting discussions, the keen interest shown in postgraduate courses, the activities of the officers, especially of the secretaries, augurs well for the future. One is forced to the belief that the component County societies for the most part believe that progress is essential, for without progress there is ever retrogression. The spirit of mutual helpfulness and the harmony everywhere apparent is encouraging and inclines one to the belief that all are working for the common good. This is as it should be for upon the integrity of the County Society and the loyalty of its membership depends the success of the State organization. So long as we continue to have County societies active in their own communities, and as deeply interested in the growth and success of the State association, we have no need to fear the future. The younger generation, guided as they doubtless will be by the unselfish and untiring devotion of their elders to their professional traditions, will take care of that. If we are to perpetuate the ideals of our forebears in medicine in this State we must see to it that a proper standard is maintained within our own ranks, that the underlying principle of ethics be the golden rule and that he who perverts an honorable profession to his own selfish ends is to be regarded as unfit in every way to minister to the "ills that flesh is heir to."

A handwritten signature in cursive script, reading "J. H. Christensen". The signature is fluid and elegant, with a large, sweeping initial "J".

President,
Minnesota State Medical Association.

EDITORIAL

MINNESOTA MEDICINE

Official Journal Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine, and Minneapolis Surgical Society.

Owned and Published by
The Minnesota State Medical Association
Under the Direction of Its

EDITING AND PUBLISHING COMMITTEE

J. T. CHRISTISON, M.D.	St. Paul
E. L. GARDNER, M.D.	Minneapolis
JOHN M. ARMSTRONG, M.D.	St. Paul
A. S. HAMILTON, M.D.	Minneapolis
L. B. WILSON, M.D.	Rochester
R. E. FARR, M.D.	Minneapolis

CARL B. DRAKE, M.D., St. Paul	Editor
F. W. Schlutz, M.D., Minneapolis	Assistant Editor

A. B. Stewart, M.D., Owatonna	First District
F. M. Manson, M.D., Worthington	Second District
Geo. B. Weiser, M.D., New Ulm	Third District
H. B. Aitkens, M.D., LeSueur Center	Fourth District
F. U. Davis, M.D., Faribault	Fifth District
F. L. Adair, M.D., Minneapolis	Sixth District
Paul Kenyon, M.D., Wadena	Seventh District
O. E. Locken, M.D., Crookston	Eighth District
E. L. Tuohy, M.D., Duluth	Ninth District

J. R. BRUCE, Business Manager
2429 University Avenue, Saint Paul, Minnesota
Telephone: Nestor 1381

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal itself, not to individuals.

The right is reserved to reject material submitted for either editorial or advertising columns. The Editing and Publishing Committee does not hold itself responsible for views expressed either in editorials or other articles when signed by the author.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

The rate for classified advertising is five cents per word with a minimum charge of \$1.00 for each insertion. Remittance should accompany order. Display advertising rates will be furnished on request.

Contents of this publication protected by copyright.

Subscription Price: \$3.00 per annum in advance. Single Copies 25c. Foreign Countries \$3.50 per annum.

Vol. XII November, 1929 No. 11

MEDICAL ALUMNI HOMECOMING

Minnesota Medical Alumni will have the opportunity of combining a one-day medical meeting with their visit to Minneapolis for the homecoming football game with Michigan, November 16. The committee of the Minnesota Alumni Association, of which Dr. J. B. Carey is chairman, has arranged an interesting program for Friday, November 15, which appears elsewhere in the journal. This is in the nature of an innovation and if well patronized is likely to be continued in the future.

Those who have not visited the campus in recent years will be interested in making a tour of

the recent additions to the medical buildings, which will be made Saturday morning at 10 o'clock. Three years ago the first wing of the University Hospital was completed to house the Cancer Research and the Eye, Ear, Nose and Throat departments. The much larger second wing of the hospital is practically completed. The new University Dispensary, which is the last word in physical equipment and is probably not surpassed by any other outpatient department, has been recently opened and the Students' Health Service has moved into its new quarters at the extreme end of the new wing. The part of the wing known as the Eustis Memorial Hospital for Crippled Children, including the pediatric department, will probably be in operation by the middle of November.

Mention should be made too of the new Northrop Memorial Auditorium just completed, which was made possible by contributions of Minnesota Alumni. It is, briefly, a magnificent structure.

Those who arrange to attend the scientific program on Friday will be able to take part in the various homecoming activities arranged for Friday evening. The occasion is one which will doubtless appeal to many alumni, more especially those located outside the Twin Cities.

REGULATION OF X-RAY FILM STORAGE

Following the Cleveland disaster, both the public and the medical profession were aroused to the danger of fire from x-ray films. In addition to their great inflammability, the danger from the poisonous gases generated by heat was most tragically emphasized. From experimental evidence before the War, this danger had been known to many physicians and to the film industry and had inspired the Eastman Company in the production of a new non-inflammable film. This film burns with difficulty and is not explosive. The only dangerous gas generated from it, as far as is known, is carbon monoxide, and this only in the presence of a limited oxygen

supply, which is true of any organic matter burning under similar conditions. The State of New York therefore attempted a solution of this problem by prohibiting the use of inflammable films.

In the State of Minnesota, the authorities in the three larger cities have been working on this problem for some time. In 1927, Minneapolis passed an ordinance controlling the handling and storing of *x*-ray films. This ordinance embraced the regulations of the National Insurance Underwriters' Association and, in the opinion of *x*-ray men, adequately covered the situation. Practically no attempt was made, however, to enforce this ordinance. In April, 1929, the 1927 ordinance was amended with the best of intentions but, unfortunately, without consultation with *x*-ray men, who were the only group able to give practical information on this subject. Many of the regulations in this ordinance, therefore, were based on purely theoretical grounds, such as the construction of separate vents to the roofs of buildings regardless of their height; specifying the exact construction of fireproof cabinets and their height from the ground in inches; limiting the amount of films to be kept in such cabinets to fifty pounds, which is far below the amount necessary in the routine practice of roentgenology; placing viewing rooms in hospitals and other institutions in the story next the roof, etc. If enforced, these regulations would result in great financial sacrifice on the part of the men who use the *x*-ray.

Next, the State Industrial Commission took the matter up with representatives from the three larger cities in Minnesota with the intention of passing the same ordinance in all of these cities and at the next session of the Legislature embodying these regulations in a State Law. A number of the men in the profession learned of this attempt and letters began to pour into the office of the Secretary of the State Medical Association. President Christison turned the matter over to the Legislative Committee for investigation and the members of this committee, in coöperation with the local societies, have been working on this problem. The city authorities have shown their willingness to take a reasonable attitude, and as far as the situation in the three larger cities is concerned a satisfactory and safe solution of this serious and perplexing problem is on its way.

If there was unanimity of opinion as to the relative efficiency of inflammable and non-inflammable films, a permanent solution would be easier. Many believe that the non-inflammable films are just as efficient as the inflammable and if more generally used would cost no more. If this is true, then the New York law would largely solve the problem in the near future. There would still be, however, an enormous amount of inflammable films to be stored, both because of the necessity of keeping films on file for two years to conform with the State Law, and for scientific purposes for many years longer. It would seem as if this whole question should be carefully considered by the State Medical Association and, if a law is to be passed, let the Legislative Committee father a law which would be practical and easily enforceable and still meet the requirements of reasonable safety.

In conclusion, we must realize that *x*-ray films are not to be handled carelessly or stored in unsafe places. An educational campaign carried on in local societies by speakers familiar with this subject would go a long way in preventing catastrophes such as that which occurred in Cleveland.

C. B. WRIGHT, M.D.

IRRADIATED ERGOSTEROL AND COD LIVER OIL IN THE PREVENTION OF RICKETS

The anti-rachitic property of irradiated ergosterol was discovered in 1924. Ergosterol preparations have been used quite extensively in England, France and Germany but were wisely withdrawn from the market in this country because of the danger of overmedication from lack of standardization.

Recently this product has become again available, since its standardization on the basis of annual tests rather than on the unit basis has made the dosage reliable.

The Council of Pharmacy and Chemistry of the American Medical Association has recently accepted, under the name of Viosterol, preparations of irradiated ergosterol in a vegetable oil having 100 times the anti-rachitic potency of high grade cod liver oil. The proper dosage of

this product as recommended by Hess¹ and his co-workers and others after considerable clinical use has been determined as follows:

For the prophylaxis of rickets in normal growing infants—8 to 10 dops a day

For premature or rapidly growing infants—15 drops a day

For the treatment of rickets in mild cases—15 drops a day in moderate cases; 20 drops a day in severe or late cases; larger doses for short periods of time.

He recommends its administration for only a few weeks at a time, and when larger doses than those recommended are given, the blood calcium should be checked at intervals.

A second preparation of irradiated ergosterol has been put on the market which is a combination of this substance with cod liver oil whereby the potency of the cod liver oil is increased five times. When we consider that even double the dose of 1 dram of good cod liver oil three times a day is often inadequate to prevent the development of rickets in a rapidly growing infant (and it is impractical to give a larger dose than this) the value of this combination is apparent. The dosage of this combination is placed at $\frac{1}{2}$ to 1 dram three times a day.

The use of irradiated ergosterol preparations is a distinct advance especially in the treatment of rickets and should replace cod liver oil and the ultra-violet ray as a curative measure. It should be remembered, however, that this product contains only the anti-rachitic vitamin D, whereas cod liver oil also contains vitamin A, which is so essential to growth and according to Green and Mellanby² is also of distinct value in affording resistance to infection.

Isolated reports indicate that irradiated ergosterol is curative in osteomalacia. There is some reason to believe that it may prove of value, too, in the treatment of Paget's disease, although it should be used with caution in any condition in which endarteritis exists.

¹Hess, Alfred J., Lewis, J. M., and Rivkin, Helen: The status of the therapeutics of irradiated ergosterol. *Jour. Amer. Med. Assn.* (Aug. 31), 1929, 93:661.

²Green, H. N., and Mellanby, E.: Vitamin A as an anti-infection agent. *Brit. Med. Jour.*, Oct. 20, 1928.

HISTORICAL COMMITTEE

We have returned from our vacation, and find our Editor has used up the material we furnished him last winter.

In February we read in the papers that the Italian consul in New York wanted a New York barber arrested because he looked and dressed like Mussolini and the Duce didn't like it. That reminded us that a Saint Paul physician was arrested in Switzerland in 1854 as it was supposed that he was Joseph Mazzini, the Italian patriot. He told the Swiss police he was an American physician. So to test him, his inquisitors asked him about yellow fever. When he stated he had never seen a case they were doubly sure he was an impostor, "as is not yellow fever an American disease?" Of course, in those days to most Europeans America was all alike from Argentina to Quebec.

At any rate he got out of jail after ten days in a small cell on a bread and water diet.

We found these "Old Docs" interesting men in many ways. Let Dr. H. M. Workman at Tracy know what medical men lived in your town in the early days, and what you know about them.

J. M. A.

THE AMERICAN CROSS CHEMICAL COMPANY

The American Cross Chemical Company is one of the trade names used by W. H. Paxton of Birmingham, Alabama, in the sale of his nostrums. Other names used are Pax American Cross Chemical Co., and American Cross Bearers. W. H. Paxton is a colored man who for some years has been engaged in selling "Pax 2 New Life Savers Compound Syrup of Fruit Juices" and "Pax 3 in 1 Healing Antiseptic and Liniment." In a prosecution by the government it was brought out that the so-called New Life Saver Tonic was said to consist of a mixture of pineapple syrup, vanilla extract, extract of blackberries, glycerine and fluid extract of juniper berries. Paxton's "Healing Antiseptic and Liniment" was said to contain glycerine, fluid extract of pokeroor, oil of lavender flowers, oil of juniper berries, oil of sassafras and fluid extract of blackberry. Paxton claimed that his nostrum would cure cancer, gonorrhea and many other specific diseases and ailments. The Post Office authorities have issued a fraud order against the American Cross Chemical Co., Inc.; Pax American Cross Chemical Co., Inc.; American Cross Bearers; W. H. Paxton, President, and Mrs. Cassie Bell Paxton, Sec.-Treas., thus denying the use of the mails for the furtherance of the sale of the nostrum. (*Jour. A. M. A.*, September 7, 1929, p. 788.)

A PAGE FORUM OF THE COMMITTEE ON PUBLIC HEALTH EDUCATION

The medical profession of Minnesota is realizing the value and becoming more active in participation in public affairs. The Saint Louis County Medical Society is outstanding in this respect. The Society has accepted the invitation of the Duluth Chamber of Commerce to take over one evening of the program of their Industrial Safety School. The idea is to supply speakers to the seven sections of this school: railroad and mining, woodworking, machine and metal, all trades, dock and elevators, truck drivers, and electrical workers. There will be from one hundred to three hundred men at each of these sectional meetings. The subject is to be "Periodic Health Examination in Industry" with a suggestion of the effect of the various industries on health. A general session will follow these sectional meetings at which all the groups will unite in joint session.

The St. Louis County Medical Society maintains an active Speakers Bureau and many talks are given at Parent-Teacher Association meetings and other similar groups. The Society cooperated in sponsoring a successful program during Baby Week.

A series of Medical Economics meetings will be held throughout the State in connection with postgraduate courses at the various sanatoria and a series of health meetings conducted by the Minnesota Public Health Association. The meetings scheduled are:

October 29—Wadena, Fair Oaks Sanatorium
October 30—Lake Park, Sand Beach Sanatorium
October 31—Crookston, Sunnyrest Sanatorium
November 1—Bemidji, Hotel Markham
November 4—Fergus Falls, River Inn

November 5—Alexandria, Alexandria Hotel
November 6—Montevideo, Dunn Hotel
November 7—Marshall, Atlantic Hotel
November 8—Worthington, Hotel Thompson

Perhaps the views of Dr. Harry Hyland Kerr, president of the Medical Society of the District of Columbia, concerning the practicality of "State Medicine" will help us clarify our own thinking. He says:

"State Medicine means the placing of the responsibility for the health of the people in the hands of the State. Now, if State Medicine were good medicine no possible objection could be made to it because what we are striving for ultimately is the good of the patient, the elimination of disease with the least economic and physical loss. But as I see it, State Medicine can never equal Medical Practice as it has now developed. In the past the practice of medicine has been essentially an individual relationship between the doctor and patient. The patient employs the doctor directly and the doctor assumes the sole responsibility for his patient's well being. Both know that the Doctor's reputation depends on his success. . . . When the State undertakes the responsibility and delegates the care of its sick to salaried doctors the standard of practice will immediately drop.

" . . . The truth is that State Medicine is already here and is now gravely altering the medical profession to a profound degree. Here in Washington there are numerous examples where the members of the Medical Society are robbed of their livelihood by the government and other services. The numerous dispensaries run by the government departments, the so-called welfare clinics and medical services of large corporations are taking the medical care of their employees away from the family doctor to turn it over to the salaried physician. It is high time that we realize the situation as it is today and not wait until we are confronted with the actual legislation foisted on the District of Columbia as an example to the rest of the country.

" . . . The education of the laity should be an important function of the Medical Society. We should have a Speaker's Bureau where the lay organizations could obtain an authoritative speaker on any of the many medical questions in which they are constantly seeking enlightenment. Such a speaker should be the mouth-piece of the Society and appear as its delegate."

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA SOCIETY OF INTERNAL MEDICINE

St. Paul, Minnesota—November 11, 1929

TENTATIVE PROGRAM

1. Report of a case of esophageal diverticulum
Dr. A. H. McFarland
2. Experiences with sodium sulphocyanate in hypertension
Dr. J. F. Borg
3. Contribution to the physiology and pharmacology of the kidney
Dr. R. M. Beiter
4. Title not yet given
Dr. H. M. Connor
5. Title not yet given
Dr. J. C. Carey
6. Title not yet given
Dr. A. H. Beard
7. Excretion of congo red by the kidney. Preliminary report
Dr. A. M. Snell
Dr. N. W. Barker
8. Title not yet given
Dr. Hilding Berglund
9. History of local medicine
Dr. A. S. Hamilton
10. Modification of cardiac physiology by digitalis with its clinical application
Mr. John Cowan
11. A case of right coronary occlusion
Dr. Ralph Warnock
12. A discussion of trauma occurring to the thoracic and abdominal viscera from severe external injury without external bruising or laceration, and with particular reference to damage to the heart muscle and its conducting mechanism
Dr. E. L. Tuohy

This will be an all-day meeting at the Town and Country Club, Saint Paul. Luncheon will be served and also dinner.

All physicians are invited to the morning and afternoon meetings.

E. L. GARDNER, M.D.
Secretary.

CLINICAL MEETING OF THE MEDICAL ALUMNI, UNIVERSITY OF MINNESOTA

Friday, November 15, the day before the homecoming for Minnesota alumni, has been selected for medical clinics to be held for the medical alumni of the University by the Medical Alumni Association. The entire day will be given to addresses and demonstrations in the new Eustis Memorial Auditorium.

The following program has been arranged:

- 8:30 The Value of X-ray Studies.....Dr. Leo Rigler
- 9:30 Infant Feeding.....Dr. W. Ray Shannon
- 9:30 Diagnosis of Abdominal Pain.....Dr. E. L. Tuohy
- 10:00 Sugar in Blood and Urine.....Dr. Otto Folin
- 11:00 Functional Disturbances Simulating Organic DiseaseDr. Ernest M. Hammes
- 11:30 Treatment of Acute Intestinal Obstruction
Dr. O. Wangenstein

The chairman of the morning session will be Dr. W. A. O'Brien.

Luncheon will be served at the hospital.

- 1:00 Common Skin Diseases and Syphilis
Dr. S. E. Sweitzer
 - 1:30 Cancer of the Uterus.....Dr. J. C. Litzenberg
 - 2:00 Teaching of Medical Experience
Dr. George D. Head
 - 2:30 Clinical Significance of Infections of the Prostate Gland.....Dr. W. F. Braasch
 - 3:00 Poliomyelitis.....Dr. Jay Durand
 - 3:30 Treatment of Fractures.....Dr. Emil Geist
- Dr. E. L. Tuohy will preside at the afternoon session.

Following the afternoon program certain very important matters will be taken up at the business session of the association.

Friday evening will be devoted to the various homecoming activities preceding the game Saturday.

ST. LOUIS COUNTY MEDICAL SOCIETY

The St. Louis County Medical Society has arranged the following program for the Industrial Safety School which will be held December 4, in Duluth:

- Railroad and Mining—"Disabling Sickness Among Workers"F. J. Hirschboeck
- Woodworking—"Tuberculosis in Industry"
D. W. Wheeler
- All Trades—"Mental Hygiene and Efficiency"
L. R. Gowan
- Machine and Metal Workers—"The More Common Bone and Joint Injuries".....J. R. Kuth
- Dock and Elevator—"The Neglected Common Cold"
E. E. Webber
- Truck Drivers—"The Health Hazards of a Truck Driver".....C. L. Haney
- Electrical Workers—"Physical Examination in Industry"M. M. Fischer

GENERAL SESSION

- Introduction of Speaker of the Evening by President-Elect of the Minnesota State Medical AssociationS. H. Boyer
- Personal Health and Efficiency.....W. A. O'Brien

HENNEPIN COUNTY MEDICAL SOCIETY NEW HOME CELEBRATION

The formal opening of the new home of the Hennepin County Medical Society in the new Medical Arts Building, Minneapolis, was the occasion for a three day celebration, September 26, 27 and 28, 1929. The new building was appropriately decorated from the street entrance to the society headquarters on the twentieth floor and the society rooms themselves were liberally decorated with flowers and ferns.

The program of the first evening was attended by about four hundred members. A musical program preceded the following addresses:

DR. N. O. PEARCE, president of the society.—

Almost 75 years ago, in a little frontier settlement on the banks of the Mississippi River, just above the falls of St. Anthony, a group of pioneer physicians

gathered in the residence of Dr. A. E. Ames, and, for the purpose of interchange of medical knowledge and regulation of their professional conduct, organized themselves into what was known as the Union Medical Society, a name that was sixty years ago changed to the present name, the Hennepin County Medical Society. The charter members were nine in number.

Our historian, Dr. Arthur Hamilton, after an exhaustive search, gathered the information that the meetings were held twice monthly and that much time was devoted to the discussion of problems of medical ethics, public health, and essays on disease. The meetings usually ended in a social function of some sort.

I suppose that the founders of this Society on that historic occasion little dreamed that they were laying the foundation for this gathering tonight, in this beautiful building, representing an organization of 520 physicians in a city of nearly half a million people. Neither could they conceive of the wonderful progress to be made in the science of medicine and surgery in this short period of less than 100 years. Tonight we are taking part in another historical event in the life of the Society and, as I turn my thoughts to the far future, I wonder what kind of a group will be holding a meeting of the Hennepin County Medical Society 100 years, or, better, 500 years hence, and will some future historian of the Society recite the events of this occasion and possibly see in our present conception of disease, its diagnosis, and treatment, as much that is queer and possibly humorous as we now do in looking back on the ideas entertained by the pioneers of this organization.

Tonight opens a new era of activity in the life of this Society. With the conveniences and comforts of this new home, it will be possible to carry out a program of scientific, business, and social activity which will mean much for the advancement of physicians and benefit to the citizens of Minneapolis.

I wish to express on this occasion the appreciation of the officers of this Society for the wholehearted and almost unanimous coöperative participation of the members in making it possible for the Society to acquire these new quarters and facilities. To Mr. Clifford and his associates, we wish to express our profound thanks for their generosity in expending so much to give us pleasant and delightful surroundings; to Mr. Yeates goes much credit for his vision and tenacity of purpose in the creation of this beautiful structure; and to Mr. Tyre, Mr. Johnson and Mr. Madsen our thanks for their interest, helpfulness and patience in working out many problems. We express our thanks to Mr. Kellogg, who is responsible for the decorations of the lounge, and it is a pleasure to publicly thank Mr. Danielson for his generosity in providing the floral decorations for the celebration. I am sure you would not like me to close without a word of appreciation to all the committees who have worked so conscientiously to make all this possible. It is hard to mention any one individual without mentioning many but I would feel remiss in my duty did I not call your attention to the generous service of Dr. Erb and Dr. Benjamin and their building and financial committee. And lastly we express our appreciation to the Women's Auxiliary for

presenting the Society with the chairs and drapes for the auditorium and for their participation in the new home celebration.

DR. PHILLIPS E. OSGOOD, pastor of St. Mark's Episcopal Church, Minneapolis.—

The opening of these rooms is symbolically significant of your ideals. The morale of the medical profession is first of all dependent upon your initial oath of ideals, but the glad sincerity and enrichment of its keeping is dependent on high-hearted, intimate comradeship in developing experience.

I know of no profession which more rigorously holds itself to the authority of standardizing ideals. Constantly, and, it is to be believed, selflessly, the medical profession sets its concepts high. Its reach deliberately exceeds its grasp. Its ideals are ideal ideals. They forbid easy content and mental crystallization. They continually command you forward.

You have honored me with the appointment as your Chaplain-of-the-moment. I am gratefully aware that in this selection it is your principal motive to bring into this occasion one who as a clergyman symbolizes the spiritual implications of our common life and work. I am reverently aware that my fortunate choice as this clergyman is not so much a personal compliment as a reverent recognition of the ultimate cause to which alike we consecrate ourselves, each in his field.

Therefore, we dedicate these rooms, and each of these purposes is a spiritual purpose. Each of these is in the interest of the medical profession and its service in this community. May we ask you, therefore, that we may definitely show the moment the dedication takes place, when I say certain sentences which I know come from your hearts and of which I am merely mouthpiece, to rise:

To the mutual interchange of experience, whereby the experience of one becomes the wisdom of others,

We dedicate these rooms.

To the standardizing of our practice by mutual inspiration and the unostentatious witness of what we are and of our unpretentious sense of honor,

We dedicate these rooms.

To the informalities of intimate converse; to the pleasantries and intimacies of sheer friendliness,

We dedicate these rooms.

To the betterment of our special expertness and to the ennobling of our realizations of human values; to the validation of our responsibilities; to the sane emotion of helpers in time of need; to the consciousness of the wide variety of specializations contained within the one function we serve, corresponding to the multiplicity of human needs contained within one human need—for the realization of these and more,

We dedicate the opportunities provided by these rooms,

and in the humblest consecration we rediscover the duty of the medical profession and dedicate ourselves to the fulfillment of our duty, saying humbly: "So help us God." Amen.

DR. MALCOLM L. HARRIS, president of the American Medical Association.—

Ladies and Gentlemen:

One of the great pleasures which come to the president of the American Medical Association is the opportunity it affords him to visit the different sections of the country and meet so many active men who are engaged in professional work. The numerous activities which come to the president I look upon as compliments to the office and to the association, and not as personal tributes to anything which I may have to say, but as long as I am in the presidency I feel very much like the Scotchman in Scotland, where the good woman came rushing into the house and cried: "Jim-mie, the neighbor's coo is in the yard." "Woman, dinna waste time here. Pay us back in milk before she gets oot." That is what the profession seems to be doing to me while I am in the presidency. But it is a great pleasure and inspiration to one who feels deeply in the welfare and progress of the profession, to be present at the dedication of this beautiful home of this Society.

To dedicate a new building is an old and honored custom dating at least to Moses, who is reported as having said to his people: "Where is the man that hath built a house and hath not dedicated it." Dedication is the consecration for convictions to duty toward a purpose or cause which commonly had a religious aspect.

Religion and medicine seem to have appeared in the mind of primitive man practically simultaneously, and went along for some time together. Religion and medicine had a common origin in the sense that they both had their origin in emotions, but the emotions which gave rise to medicine and those which gave rise to religion are very different, and for that reason medicine and religion soon parted company. The emotions which gave rise to medicine are those of sympathy and pity, which inspire in man the desire to relieve human suffering. The emotions that gave rise to religion are those of awe and fear of the unknown, or a mysterious supernatural force that had to be propitiated, or whose good graces were to be sought in forms of worship as exemplified in the various forms of ritual. Every great movement in the world has had emotion as its origin. Emotion is the basis of civilization, but for a given emotion to create the same feeling or result in a uniform reaction, it is necessary that there be developed an emotional culture, which has a binding or unifying force. Every religious sect has its emotional culture in its very form of worship, or in its ritual. Medicine, too, has its emotional culture in the form of principles of medical ethics, which have always been an inspiration to the profession and whose principles are just as sound today as they were when they were first enunciated.

Then let the association here dedicate this new building to the good of humanity; to the relief of human suffering and to a very conscientious and clear understanding and regard for the principles of medical ethics as expounded and promulgated by the American Medical Association.

DR. WILLIAM J. MAYO, Mayo Clinic, Rochester, Minnesota.—

It is certainly a pleasure and pride to me to be with you here tonight and felicitate the Hennepin County Medical Society upon these splendid quarters that they have for their future work. There is something I had in mind that the president has remarked upon and that is: The Twin Cities are great centers of education and the great leaders in all lines of thought, including medicine, and we down at Rochester, only 100 miles south, feel that after all we are only a suburb of Minneapolis and St. Paul, and we are grateful for the opportunity to meet with you as part of your body.

Now, there is something significant in the dedication of these rooms and the dedication of this building which is to be occupied by doctors. If we go back to the earlier times in medicine (and I wish to say we could go back a number of years) we find that doctors are great individualists. We have the greatest difficulty in an organization in which we can work comfortably with each other, and that has been so absolutely essential in the practice of medicine in the past, because each man within himself must find his needs and sources of action which enable him most to take care of the patient. Myself for one am not able to know more than a small part of some one of the various sources of information. What are we going to do? We are dedicated to the care of the sick. We no longer individually and personally can take care of the sick as we did in our fathers' time. The time has come when we must come together, because it is only as we can call upon each other as sources of specialized information that we can do our duty by the patient. And so we see in this building the home for the type of organization that will permit us each one to secure from each other those types of knowledge that are the highest of construction and those aids that will enable us to carry out our intentions to the people. So, as we look at medicine, at least from my standpoint, we are looking at medicine of a new type to that of our fathers. We look to organized medicine in which each one will play his part, not as an individual but as part of a group or army, and it is only as we recognize this necessity for group practice of medicine are we going to be able to do our duty by the patient.

Now, it is easy to see that this union must be an organic one. I do not know personally of any practice of medicine that is practised alone. We are calling unconsciously upon the Health Department for all those sources of information that will help us take care of a case. We are calling upon the x-ray specialist—unconsciously—no longer an individual but only one of a group. We must not think that this change does not necessitate organic union, but in some such manner as you are attempting to achieve here are we going to be able to organize the profession as a whole for the practice of medicine, in which each man will reserve his individuality and still will be able, through his sources of information, to give the patient that which he has a right to have, and which it is the best for modern medicine to give.

DR. J. T. CHRISTISON, Saint Paul, president of the Minnesota State Medical Association.—

Ladies and Gentlemen of the Hennepin County Medical Society:

I can assure you that it is with a great deal of pleasure and satisfaction that I am able to be here tonight to bring you the felicitations and congratulations of the State Medical Society and of the sister Society of Ramsey County.

I do not believe it is incumbent upon me to say very much upon the question of dedication. This charming ensemble, from the roof garden and the library to this room, is evidence of a wonderful accomplishment. This is a wonderful age in which we are living. Ever and anon, across the intervening years, there comes into the range of our vision a man of accomplishment; a man who has done something out of the ordinary. An achievement if you please. One is reminded of the first verse of that poem, "The Bridge Builders."

"They builded magnificent bridges,
Where rivers and highways go;
They persistently mounted ridges
And where great rivers flow.
There was never a land so distant,
There was never a one so wide,
But the mind of man insistent,
Crossed to the other side."

The "it" of achievement.

Let us hark back to two or three years ago, to that achievement of Lindbergh's. If someone had said to us five or six years ago that that sort of thing could be done, we would have said: "No, it cannot," and yet, here's a man that goes out and does the virtually impossible. Here's our own Harrison Johnson, hopelessly, apparently, beaten out there in California, and with the power and force of nerve, comes back and brings to the State of Minnesota the amateur golf championship. These men are classed as those who have accomplished wonderful achievements. Let us take, for instance, the gentleman who preceded me. Many years ago, when he was a young man, he had a vision—a vision of a great clinic. A vision of group medicine. Some of his good friends scoffed at the idea, but he did not give up. He had a firm and fixed determination that he was going to accomplish something, and today you and I know that from every portion of this globe, the lame and the suffering flock to Rochester. Why? Because of that man who had vision; because of the fact that his determination and his power of discernment have enabled him to realize that vision of his young youth. He has been honored as no man of the medical profession has, so far as I know, ever been honored. Great universities all over the world have conferred upon him honorary degrees, and I venture to say that if by some accident he had been born in that tight little island where his father was, we would have addressed him at least as "Sir William" if not "My Lord Rochester." And yet he knows the love and affection that we all bear him. That our hearts are filled with the admiration that we have for him, and he knows what we mean when we address him as "Dr. Will" (and "Dr. Will" it always will be to us, and "Dr. Charlie" his brother).

We don't think of it as the Mayo Clinic, but as Will and Charlie. I remember years ago I used to go to Rochester. I didn't go then to visit the Clinic, but there was a group of individuals there who used to give the most charming parties you can possibly imagine, and I can remember seeing Will and Charlie get into their old cutter and go off somewhere to make a call for \$15 or so.

Today we see another accomplishment. The vision of some individual has brought about these beautiful quarters of the Hennepin County Medical Society. And the members of the Society inconsequentially sit back in their chairs and say they did it! They didn't do it at all. Some individual's vision has brought this about. There were many committees, doubtless, back of it, who helped with the work, but some member's vision brought about the result that we are now dedicating. Of course I, as our good friend Dr. Pearce said a moment ago, feel just exactly as much at home in Hennepin County as I do in Ramsey County. I have come over to the Hennepin County Medical Society meetings many times. Sometimes I have discussed medical subjects; sometimes I have come over here to try to sell you something, but I must say I have never attended any county society where I have received a more cordial reception to anything that I ever had to ask as president or member of the State Legislative Committee, than from the Hennepin County. It is certainly a privilege and a pleasure to again congratulate you on the culmination of this wonderful idea. Whose idea it was I don't know or for the moment care. We in Ramsey County are not going to be envious of you. Perhaps we will come over here from time to time to ask you to permit us to enjoy these comfortable rooms and stand out on the balcony and look over your wonderful city. Dr. Pearce spoke of 100 or 500 years hence. There will not be any Twin Cities then; there will be one great community. The end-result of all this to my mind should be summed up in an earnest desire on the part of the members to promote harmony, promote good will, avoid bickering and treat each other member of the Society as you would like him to treat you.

Following the dedication exercises those present viewed the new quarters.

On Friday morning Dr. Fred L. Adair, Professor of Obstetrics and Gynecology, University of Chicago, gave a very interesting clinic on "Syphilis of the Mother and New Born Child," and was followed by Dr. Harry M. Richter, Prof. of Surgery, N. W. Medical School, Chicago, who showed a large number of patients, confining his remarks largely to surgical conditions of the thyroid gland and the abdomen. He was followed by Dr. William Braasch, of Mayo Clinic, Rochester, who showed a number of patients, many lantern slides, and gave a masterly clinic, emphasizing the importance of the urological examination in the general scheme of physical examination. During the afternoon a large number of people attended the reception, when the Society rooms were open for inspection by the public. At the same time, the Minnesota Medical School Alumni Association held their annual golf tournament on the Woodhill course. The large silver cup which was won last year by Dr. C. L. Oppegaard, of Crookston, Minn.,

this year fell to the masterly golf of Dr. J. M. Culligan of St. Paul. Drs. Turnacliff and Culligan both had fine 77's, the difference of one stroke in handicap giving the cup to Dr. Culligan. On Friday evening, a dancing party was attended by many of the members and visiting doctors and their wives, the women of the Auxiliary welcoming the opportunity to see the new home where they will carry on their activities in the future.

Saturday morning was devoted to medical clinics given by Dr. Ralph Kinsella, Prof. of Internal Medicine, St. Louis University, St. Louis; Dr. William S. Middleton, University of Wisconsin; and Dr. L. G. Rowntree of Mayo Clinic. The clinics were very well attended, many visitors from outside the Twin Cities coming in for the occasion. On Saturday evening a boxing ring was set up in the auditorium and a large gathering of physicians and their friends enjoyed a stag smoker and supper, with vaudeville and boxing for entertainment.

The members of Hennepin County Medical Society are taking great pride in their new quarters and expressed themselves as delighted with the opening program.

LYON-LINCOLN COUNTY MEDICAL SOCIETY

A special meeting of the Lyon-Lincoln County Medical Society was held at Tracy Thursday, September 19. At a noon luncheon meeting of the Kiwanis Club, Mr. F. Manley Brist, attorney for the State Board of Medical Examiners, addressed the members on "Quacks and Quackery." In the evening a joint dinner meeting with the members of the County Dental Society was held at the Antlers Hotel, at which there were also present Dr. F. H. Aldrich of Bellview and Mr. Frank W. White of Marshall, representatives for the second and seventh districts, respectively, in the 1929 Legislature; Dr. H. M. Workman of Tracy and Dr. L. Sogge, Counsellors; Dr. H. M. Johnson, chairman of the Legislative Committee; Dr. C. L. Sherman of Luverne, Dr. George B. Weiser of New Ulm, members of the State Board of Medical Examiners, and Dr. J. T. Christison, President of the State Association.

Following the dinner members and guests adjourned to the rooms of the Tracy Clinic in the Masonic Temple. The meeting was called to order at eight o'clock by Dr. Ward Akester of Marshall, President of the society. Dr. Christison gave a short address on the value of organization. Dr. Johnson and Dr. Sogge spoke on Legislation, and both contrasted the present harmonious and prosperous condition of the State Association with that of a decade ago. Dr. Sherman and Dr. Weiser told of the activities of the State Medical Examining Board. Dr. Aldrich and Mr. White both stressed the value of the Legislative Committee in its relation to members of both Senate and House, especially in their ability and willingness to put facts before these bodies and enable them to correctly understand and evaluate the various bills under consideration and to realize that the medical profession was more concerned with the public health and welfare than with any selfish desire to profit by legislative enactment.

At this juncture Dr. Akester announced that adjournment would be taken to a larger meeting room where the Civic and Commerce Association of Tracy was in session. Mr. Brist was here called upon and gave a most illuminating address upon "Quacks and Their Methods," citing several flagrant cases recently brought into court in which fines and imprisonment were imposed, some suspended on promise of the offender to leave the state and others given jail sentences. This address was largely educational and was thoroughly appreciated by the lay audience.

MINNESOTA SURGICAL SOCIETY

The first fall quarterly meeting of the newly organized Minnesota Surgical Society was held Saturday, Sept. 14, 1929.

Following a luncheon at the Kitchi Gammi club the surgeons met in the afternoon at St. Luke's hospital. The program follows: "Pre-operative and Post-operative Treatment of Prostatectomies," Dr. W. N. Graves; "Physiology of Spinal Anesthesia," Dr. R. J. Moe; "Fracture of Carpal Bones," Dr. Gordon MacRae; "Skull Fractures," Dr. P. S. Rudie, and "Post-operative Hypothyroidism," Dr. W. G. Gillespie.

The winter meeting will be held at Rochester, Minn., and the spring session at St. Paul, both of which conferences will be similar to the meeting held in Duluth.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

Dr. H. C. Cooney of Princeton, Minnesota, was elected president of the Northern Minnesota Medical Association at the meeting held in Bemidji, September 2 and 3. Dr. E. W. Johnson, Bemidji, was elected vice-president and Dr. O. O. Larson, Detroit Lakes, was re-elected secretary-treasurer.

The meeting had an attendance of approximately 150, including members and their families.

ERGOT PREPARATIONS OMITTED FROM N. N. R.: AN EXPLANATION

In the Journal of the American Medical Association, May 4, 1929, there was published a report by the Council on Pharmacy and Chemistry on certain preparations of ergot which were intended for hypodermic administration. This report stated that the preparations had been omitted from New and Non-official Remedies because they were essentially watery extracts of ergot and therefore contained little or none of the drug; because, with one exception, they were not assayed by any method which showed their alkaloid content; and that an examination had shown that they were practically devoid of the specific alkaloids. Inasmuch as there seems to be in certain quarters some misunderstanding of the action, the Council on Pharmacy and Chemistry points out that the reason for omitting these preparations are those stated in its report, and the Council emphasizes that no evidence was found to indicate that in any case there was adulteration, or that improper ergot had been used in the manufacture of these products. Nor was any preparation found to be unduly toxic. (Jour. A. M. A., September 7, 1929, p. 769.)

CONSULTATION BUREAU

WM. A. O'BRIEN, M.D., *Director*

Minnesota State Medical Association

11 West Summit Avenue

Saint Paul, Minnesota

1. *Question.*—A spinster, 39 years of age, with a slight cardiac lesion and an earlier questionable lung tuberculosis, was operated on for fibroids of the uterus. Before the operation was done, she was given two radium treatments, the effect of which lasted about six months. The uterus, part of the tubes, and part of one ovary were removed. Following the operation, she developed paralysis of the ankles and feet. She was unable to lift her toes or feet. One month later, there was no feeling from the hips down and a sensation of coldness in the lower extremities. The left eyelid would not open easily, but could be opened with effort. She was unable to lift her knees. Three days later, feeling and motion had returned as far down as the upper third of the legs. She left the hospital fifteen days later, but she could not walk alone. She walked on the external surface of both feet. This part struck first and then she shifted to the weight bearing part. One week later, the second and third toes of the right foot could be elevated. Pin pricks can now be felt all over the right leg and foot. In the left foot, pin pricks are not felt on the posterior two-thirds of the plantar surface and on a narrow strip above the external malleolus. She can feel hot and cold everywhere. There has been a gradual improvement in the strength of the ankles, and she can now walk with low heels and crutches. Sphincters have always been normal. Urination was painful during the act and for about an hour before. Now urination is painful only at the end.

Answer.—A diagnosis of probable hysteria is made. This is based on the irregular distribution of the findings and the pin pricks. Retention of hot and cold and absence of pin prick sensation is very unusual in any other condition than hysteria. If the Babinskis are absent, the diagnosis becomes more certain as it is practically impossible to mimic a Babinski.

We are all aware of the danger in making this diagnosis, but if you will proceed on this assumption without telling the patient what you think is the real trouble and treat her with psychotherapy, it is safe to predict a good result.

2. *Question.*—If a child of so-called Christian Science parents should fracture an arm and the child decide that he did not want a physician and was allowed by the parents to go unattended will any insurance company pay indemnity either directly or through compensation channels?

Answer.—Your statement about the possibility of payment through compensation channels suggests that the fracture may have occurred in the course of the child's employment and so is compensable under the Workmen's Compensation Act. In such a case, the liability of the insurer would depend on the terms of the Workmen's Compensation Act in force in the jurisdiction where the fracture occurred and no categorical answer can

be given without knowing where the fracture occurred. As an example, the Workmen's Compensation Act of Wisconsin provides for Christian Science treatment in lieu of medical treatment at the option of the employee, but provides that the employer may relieve himself of any liability under that option by filing a written notice that he will not be subject to it. In California, an employee refused medical attention and obtained the services of a Christian Science practitioner. The industrial commission denied compensation for such portion of his permanent disability as was due to his failure to accept the recognized remedies for his injury.

If the hypothetical claim of the insurance company arises not under a Workmen's Compensation Act, but under an accident insurance policy, the liability of the insurer would depend on the exact language of the policy. In the absence of the knowledge of the hypothetical policy, I cannot offer any suggestion as to the possible liability of the insurer.

3. *Question.*—I would like to receive information about Lepso, sold by the Lepso Company, 895 Island Avenue, Milwaukee, Wisconsin. It is a reputed cure for epilepsy, which sells for a rather fancy figure.

Answer.—I am asking Dr. Arthur J. Cramp, Director, Bureau of Investigation, American Medical Association, to mail you a copy of the pamphlet entitled, "Epilepsy Cures and Treatments," which contains an account of the investigation of Lepso. Most of the epilepsy cures contain bromides and Lepso is not an exception.

4. *Question.*—Young man, aged 29, injured his back one year ago. Pain was not great, and he continued to work. Ten months after the injury, the pain, which had never completely left him, became very severe. X-ray examination of the back did not reveal any pathological change. Examination was repeated one month later, and the tenth dorsal vertebra was found to be markedly increased in density. There was a soft tissue tumor surrounding the involved segment. Patient grew progressively worse, and a laminectomy was done because of evidence of myelitis. The tumor, which was a rather firm, bluish mass, was partially removed. The pathological diagnosis of sarcoma has been made. What is the prognosis?

Answer.—Some sarcomata are very sensitive to radiation. It would be advisable for you to give your patient a regular course of treatment. If the tumor has not invaded the spinal canal and cord, there is a possible chance for some return of function. The prognosis is not good because of the difficulty of completely removing tumors in this region and because of the tendency to recurrence.

OBITUARY

Liston Q. Greeley

1868-1929

Dr. Liston Q. Greeley, practicing physician in Duluth for the past thirty-two years, died suddenly at his home September 23, 1929, as the result of a relapse following a minor operation.

Educated at the Fergus Falls, Minn., high school, Dr. Greeley later attended the St. Cloud normal school and received his medical education and degree from the University of Minnesota in 1897. He came to Duluth in August of that year and began the practice of medicine with offices in the West End. He became widely known in the West End during his many years there. Several years ago he established offices down town.

Dr. Greeley was a member of St. Louis County Medical Society and the State and National Medical Associations.

Survivors are his wife, two daughters, Charlotte and Clara Mary; a son, Horace; two brothers, including Dr. H. W. Greeley, Rochester; and a sister, Mrs. Frederick Eames, Duluth.

John H. James

1846-1929

Dr. J. H. James, one of Mankato's oldest physicians, died September 19, 1929, of heart disease at the age of 83 years.

Dr. James, who was born in Greenwich, N. Y., and received his degree from New York university, was a member of the National, State, Southern Minnesota, and Blue Earth County Medical Associations, the American College of Surgeons and the American Ophthalmological and Otolaryngological Society.

His widow and a brother, Fred James of Rochester, survive.

Arthur W. Whitney

1864-1929

Dr. Arthur W. Whitney died September 14, 1929, after having suffered from poor health for two years. He was born in Ontario and graduated from Queens college, Kingston, Ontario. His post-graduate work was done at Northwestern, Johns Hopkins and Harvard universities.

Dr. Whitney began his medical practice in St. Paul, 33 years ago, and since then had lived there continuously.

Survivors are his widow, Clara; a daughter, Mrs. Joseph M. Taylor, Minneapolis; a sister, Miss Anna Whitney, who is a teacher in the public schools; and three brothers, Edmund and George, St. Paul, and Wilfred, Toronto.

COMMUNICATION

To the Secretary,
Minnesota State Medical Association

Dear Doctor:

You and the members of your association are most cordially invited to attend the next annual meeting of the Southern Medical Association which will be held in Miami, November 19 to 22. Our Association is making every effort to make this the outstanding meeting of the Southern Medical Association. The scientific program, with its twenty Sections, will insure a most diversified and interesting meeting. The clinics to be presented by the Dade County Medical Society will afford an excellent demonstration of the practical phases of medicine and surgery.

The sunshine and optimism of Florida will be injected into a well-arranged entertainment program. Golfing, boating, swimming, fishing and trap-shooting will be here for you. Miami and Miami Beach are amid the tropical setting of the show places of this great nation. At this season of the year, they are particularly beautiful, as are other sections of Florida. The members of your Association will be afforded the opportunity of not only attending the best meeting the Southern Medical Association has ever held, but also of visiting our beautiful state to which thousands of tourists make an annual pilgrimage.

It is a privilege for the Florida Medical Association to entertain this great Association and we are desirous of having your members as our guests during the coming meeting of the Southern Medical Association. May I ask that you give this meeting editorial space in the coming issue of your Journal.

Thanking you for your coöperation and looking forward to greeting you personally in Miami in November, I am

Most cordially yours,

SHALER RICHARDSON, M.D.,
Secy.-Treas.-Editor.

MUM—NONSPI—ODORONO

In 1914, Mum was found to contain essentially zinc oxide and benzoic acid in a fatty base. In 1915, it was reported to contain salicylic acid, zinc oxide, glycerin, water, a tallow-like fat and traces of essential oils. Later the A. M. A. Chemical Laboratory found the product to contain 3 per cent benzoic acid and not salicylic acid. According to information available, the base of Nonspi is aluminum chloride dissolved in water containing some potassium and iron. In 1915, Odorono was found by the A. M. A. Chemical Laboratory to contain a 33 per cent solution of hydrous aluminum chloride. (Jour. A. M. A., September 28, 1929, p. 1012.)

OF GENERAL INTEREST

Dr. and Mrs. F. G. Benn have returned from a summer's sojourn in Europe.

Dr. and Mrs. Frederick H. K. Schaaf of Minneapolis have returned following a trip of several months abroad.

Dr. and Mrs. W. A. Fansler with their daughter, Miss Jane Fansler, have returned from a summer's stay in Europe.

Dr. Albert Allemann, former editor of the Medical Interpreter, wishes it known that he resigned as editor of the journal in December, 1928.

Although there has been no formal opening as yet, the Moose Lake hospital, at Moose Lake, Minnesota, recently completed, is now in use.

A recent report from the State Board of Health states that typhoid fever today is so rare in Minnesota that many medical students never have an opportunity of seeing a single case of the disease.

Members of the St. Louis County Medical Society at their annual banquet in Duluth, October 10, paid tribute to Dr. D. D. Murray and Dr. C. J. Braden, senior members of the society and pioneer medical practitioners in Duluth.

Dr. E. L. Gardner of Minneapolis has been appointed a member of the Editorial and Publishing Committee of MINNESOTA MEDICINE to fill the unexpired term of Dr. Adair, who has recently become associated with the University of Chicago. Dr. Adair took up his new duties in Chicago the first of October.

Dr. S. H. Boyer of Duluth, member of the State Board of Health, has been named by Governor Christianson to serve on an advisory commission to represent Minnesota in bringing about a better coöperation between state agencies with the Federal departments devoted to supervising and aiding Indian residents of the state.

Dr. L. P. Culver is associated with Drs. Larson, Wheeler and Wold in the practice of eye, ear, nose and throat diseases at 1027 Lowry Medical Arts Building, Saint Paul. After practicing in Stillwater, Dr. Culver took postgraduate work in his specialty for four months in Boston, and spent a year, for the most part, in Vienna.

Dr. A. J. Chesley of St. Paul, secretary and executive officer of the Minnesota department of health, was elected president of the American Public Health Association at its annual convention recently held in Minneapolis. He succeeds George W. Fuller of New York City. Dr. F. E. Harrington, Minneapolis commissioner of health, was elected third vice president.

The Northwestern Health Journal, which began as a small pamphlet several years ago devoted mainly to the activities of the Minnesota Public Health Association, has rapidly become a lay health journal of some importance with a rather widespread circulation. Its name, therefore, beginning with the October issue, has been changed to "Everybody's Health." The journal is particularly adapted to the physician's reception room.

Dr. Robert L. Sanders, Memphis, Tenn., was elected president of the Association of Resident and ex-Resident Physicians of The Mayo Clinic and Mayo Foundation at the eleventh annual reunion at Rochester in October. He succeeds Dr. G. J. Thomas of Minneapolis. Vice presidents elected are Dr. James Scarborough, Little Rock, Ark., and Dr. Carl R. Steinke, Akron, Ohio. Dr. John S. Abbott was re-elected secretary.

Dr. H. W. Christianson has sold his practice at Wykoff, Minnesota, to Dr. R. H. Beiswanger of South Saint Paul. Dr. Christianson has been located at Wykoff for the past eight years and is taking a fellowship in Proctology at the Mayo Clinic. Dr. R. H. Beiswanger is a recent graduate of the University of Minnesota and had been engaged in first aid work with an industrial plant in Saint Paul before locating in Wykoff.

Dr. W. E. Sistrunk left The Mayo Clinic, Rochester, August 31, to engage in the practice of surgery at Dallas, Texas. Dr. Sistrunk received his Ph.D. in 1900 from the Alabama Polytechnic Institute and his M.D. degree from Tulane University in 1906. In 1911 he joined The Mayo Clinic as assistant in pathology and began his surgical work in 1912. Before his departure a farewell dinner was given in honor of Dr. Sistrunk by a group of his colleagues.

The eleventh decennial Pharmacopeial Convention has been called for May 13, 1930, at Washington, D. C. We have been requested to announce that a questionnaire containing a list of products published in the eighth and ninth pharmacopeia but omitted in the tenth revision has been prepared and will be sent to any physician or druggist interested. It is the desire of the Committee on Revision to learn what demand there is for these omitted articles. From a cursory review of the list it would seem that their omission was advisable.

TUBERCULOSIS POSTGRADUATE COURSES

Advance registrations for the series of seven tuberculosis postgraduate courses for physicians to be held under the auspices of the Minnesota State Medical Association, Minnesota sanatoria, and the Minnesota Public Health Association indicate intense interest on the part of the physicians. The series started October 24 at Pokegama Sanatorium, Pine City. These short courses, which are free to physicians, are made possible through Christmas Seal funds.

The schedule for subsequent courses follows: Fair Oaks Sanatorium, Wadena, October 29; Sand Beach Sanatorium, Lake Park, October 30; Sunnyrest Sanatorium, Crookston, October 31; Southwestern Minnesota Sanatorium, Worthington, November 8; State Sanatorium, Walker, November 13, and Glen Lake Sanatorium (Hennepin County) near Hopkins, November 15. Physicians interested in any of these courses may obtain full details by addressing the Minnesota Public Health Association, 11 West Summit Avenue, Saint Paul.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council of Pharmacy and Chemistry:

ABBOTT LABORATORIES

Metaphen 2500

HOLLISTER-STIER LABORATORIES

Bacillus Acidophilus Culture-Hollister-Stier

Acne Vaccine

Pertussis Bacillus Vaccine

Typhoid-Paratyphoid Prophylactic

Staphylococcic Vaccine

MEAD JOHNSON & CO.

Sobee

SANDOZ CHEMICAL WORKS, INC.

Calcium Gluconate-Sandoz

E. R. SQUIBB & SONS

Diphtheria Toxoid-Squibb, 30 c.c. vial

TRUTH ABOUT MEDICINES

Ointment Ephedrine Compound.—An ointment containing ephedrine-Lilly (New and Non-official Remedies, 1929, p. 166), 1 Gm.; menthol, 0.65 Gm.; camphor, 0.65 Gm.; oil of thyme, 0.0375 Gm.; hydrous wool fat, 5 Gm.; liquid petrolatum, 24 Gm.; white petrolatum, to make 100 Gm. Eli Lilly & Co., Indianapolis.

Lilly's Ephedrine Jelly.—It is composed of ephedrine sulphate-Lilly (New and Non-official Remedies, 1929, p. 169), 1 Gm.; glycerin, 15 Gm.; tragacanth, 1.5 Gm.; eucalyptol, 0.1 Gm.; oil of wintergreen, 0.005 Gm.; oil of dwarf pine needles, 0.005 Gm.; water to make 100 Gm. Eli Lilly & Co., Indianapolis.

Vioform-Ciba—Iodochlorhydroxyquinolin.—A substitution compound of anachlor-ortho-hydroxy-quinoline resulting from the introduction of one atom of iodine. Vioform-Ciba is used as an odorless substitute for iodoform. It is used as a dusting powder for application to wounds, ulcers, burns, exudative skin eruptions, etc. Ciba Co., Inc., New York.

I-X Barium Meal.—A mixture of barium sulphate U.S.P., 85 per cent; native aluminum silicate, 10 per cent; malted milk (malt extract-milk powder), 5 per cent; with a trace of saccharin. The preparation is used for roentgen-ray examinations, administered orally or by rectum. Dick X-ray Co., St. Louis.

Mead's Powdered Lactic Acid Milk Noncurdling, No. 1 With Dextrin-Maltose.—A modified milk product prepared by adding lactic acid, U.S.P., and a maltose-dextrin preparation to whole milk, heating, drying, and powdering. It is proposed for use in the feeding of infants when it is desired to prescribe an acidulated milk with a certain amount of added carbohydrate. Mead Johnson & Co., Evansville, Ind. (Jour. A. M. A., September 7, 1929, p. 769.)

Sobee.—A mixture of soy bean flour 67.5 per cent and barley flour 9.5 per cent, to which has been added olive oil 19.0 per cent, sodium chloride 1.3 per cent, and calcium carbonate 2.7 per cent. Sobee is used as a substitute in the diet of infants who are sensitive to

the proteins of milk. Mead Johnson & Co., Evansville, Ind. (Jour. A. M. A., September 28, 1929, p. 989.)

Cod Liver Oil with Viosterol 5 D.—Viosterol dissolved in cod liver oil, the solution containing not less than 400 vitamin A units per Gm. when tested by the pharmacopeial method and 66.65 rat units of vitamin D per Gm., this antirachitic strength being five times that of a potent cod liver oil used as a standard. This product is proposed for use in conditions in which it is desired to supplement the administration of vitamin A with that of vitamin D. For infants and young children the dose is 2.5 to 3.3 c.c. (53 to 67 minims) daily.

Abbott's Viosterol Cod Liver Oil.—A brand of cod liver oil with viosterol 5 D, N. N. R. Abbott Laboratories, North Chicago, Ill.

MISCELLANEOUS

STATE BOARD OF MEDICAL EXAMINERS

Oscar Von Schoppelrei (alias Dr. Von Schoppelrei) sentenced to two years in prison.—On October 11, 1929, before the Honorable Matthias Baldwin, Judge of the District Court for Hennepin County, Minnesota, Oscar Von Schoppelrei, who is not a medical man, but who claimed to a doctor, entered a plea of guilty to the crime of abortion and was sentenced by the Court to two years at hard labor in the State Penitentiary at Stillwater. Von Schoppelrei ran afoul of the law a year ago by sending health certificates to the State Board of Barber Examiners for applicants attending one of the barber colleges in Minneapolis. At that time, through the intercession of the State Board of Medical Examiners, his services were dispensed with and he dropped out of sight for the time being. He again resumed his activities along a different line, however, with the above result. A woman confederate of Von Schoppelrei's was sentenced, at the same time, to two years in the State Reformatory at Shakopee.

State of Minnesota vs. George Garoponlo (alias Dr. George).—The defendant, claiming to be a doctor, was arrested July 2, 1929, on a complaint signed by Mr. Brist, on behalf of the State Board of Medical Examiners, charged with violating the 1927 Basic Science Law, in that he attempted to diagnose and treat an ailment that he called syphilis, which in reality was simply a minor skin disturbance that cleared up in three or four days under proper medical attention. Upon being brought into court, the defendant entered a plea of not guilty. His bail was set at \$1,500.00, and upon the preliminary hearing, held September 23, he was bound over to the District Court with bail in the same amount. October 7, 1929, before Honorable J. C. Michael, Judge of the District Court, St. Paul, Minnesota, the defendant entered a plea of guilty and was fined \$250.00 or 60 days in the workhouse. The fine was paid and the defendant discharged from custody.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of September 25, 1929

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, September 25, 1929, having been postponed two weeks. Dinner was served at 7 p. m. and the meeting was called to order at 8 p. m. by the President, Dr. C. N. McCloud. There were 33 members present.

Minutes of the May meeting were read and approved.

The scientific program consisted of the following:

DR. RAE T. LAVAKE (Minneapolis) read his Thesis, entitled "The Rectal Examination and the Concealed Second Stage of Labor."

DISCUSSION

DR. J. L. ROTHROCK (St. Paul): I have been much interested in this condition which Dr. LaVake described and was glad to note that he gave us a little bit of the relative merits of the vaginal and rectal examinations. It seems to me that as the rectal examination has been brought to the front it has been productive of one thing, and that is the fact that, owing to its safety and the ease with which it is done, it has overshadowed the abdominal palpation, which, in my estimate, is superior to either the vaginal or rectal examination. By it we can find out many things; we can tell many times whether there is malposition. In the early stages by the rectal examination as well as by the vaginal examination it is impossible to diagnosticate the position. I personally do not hesitate to make a vaginal examination and, with proper protection, do not believe that the vaginal examination is a great danger. I insist on proper preparation and a very thorough technic, which, I regret to say, a great many practitioners have not acquired. They forget the fact that the bacterial flora on the inside of the labia is the same as on the skin and unless they are cleansed and great care taken there is great danger of carrying infection from the labia inside. I don't wonder they get infection.

With regard to this condition which Dr. LaVake has described, I have not observed it. I observe one cardinal rule in obstetrics—if the patient has good pains and the head does not descend well, I do not hesitate to ascertain why. I take the patient into the examining room and prepare for delivery. If there is a disproportion in the size of the head and pelvis, the head does not readily engage; if the head is soft and movable you can make allowance that it will mould and may engage. In the early stage you can then select and carry out your proper procedure; if it is going to be an instrumental delivery, then a further trial of labor; if not, then an immediate cesarean section. It has been a very great help to me since I adopted that plan. I want to add that I make as few examinations as possible. I utilize the rectal examination to ascertain the progress of dilatation of the cervix. If I want

to find out whether there is disproportion, it is always by a vaginal examination and then always under an anesthetic.

DR. J. F. HAMMOND (St. Paul): This is a rather interesting discussion regarding the relative merits of the vaginal and rectal examinations. I think as a rule in any procedure the simplest method is preferable and certainly the rectal examination is the simpler method of getting the information. In a great many cases, as Dr. Rothrock stated, it is possible to get all the information required by abdominal palpation and, with the additional information gained by doing a rectal, I think that is all that is necessary. There are cases though when one feels all the necessary information has not been obtained and then I think one should not hesitate to do a vaginal under proper precautions. As a matter of fact the preparation for a vaginal examination is often inadequate. The only wonder I have is that in many cases there are not more infections owing to the way the examinations are done. The nurse may make a very elaborate preparation and the doctor will come along with possibly sterile gloves and introduce the gloved finger through the vulva not prepared at all. The patient in that way is submitted to the possibility of infection. On the other hand, I think students are now instructed that they can get all the information necessary from the rectal examination. Just the other day in the hospital an intern told me there was three-fingers' breadth dilatation in a patient under observation. He had made a rectal examination. I made a vaginal and decided to send the patient home. There was no dilatation. I also had made a rectal but could not be sure. I have frequently heard doctors say that the rectal examination is absolutely useless. That is wrong. A great deal of information can be obtained in this way but the attendant must realize it is not sufficient in some cases.

Regarding this concealed second stage, I have not recognized that so much. The mistake usually made is that one feels that the cervix is completely dilated when it is not and it is necessary in a good many cases to make a thorough and proper vaginal examination.

DR. H. B. SWEETSER (Minneapolis): I have been very much interested in the discussion of the care with which asepsis is arrived at. I would like to ask if you know the difference in the mortality and morbidity rates today and say thirty or forty years ago? It is assumed from what I have just listened to that most women are delivered in the hospital under the most rigid aseptic care. Thirty or forty years ago we never delivered a patient in a hospital and we had no trained nurses, and we had very little aseptic technic as it is looked upon today. And I am wondering how much difference there is in the mortality and morbidity rates of then and now.

I was Assistant City Physician about 1890 and delivered a lot of the poor women of the city. Frequently I would go to a poor family and about the only preparation provided would be clean sheets to put on the bed after the baby was born. As I remember it, there was very little mortality or morbidity, and I have often wondered whether the number of women now delivered in the hospital will not show a higher rate of both than

at that time. If this is so, and I am led to suspect that it is so, from a survey of the literature of recent years, the cause lies probably in some measure in the grouping of many women together. Therefore, in addition to the aseptic care so well outlined by Dr. La Vake, equal care should be exercised by the hospital management in excluding from the obstetrical wards all possible sources of infection.

DR. LAVAKE: I thought this would be of interest to you because at present the rectal examination is being taught in many schools. Unless the student is taught, as Dr. Rothrock says, that when he is clearly in doubt he had better check up by a vaginal examination, that man may allow the patient to go on until a serious condition exists. Dr. Rothrock is absolutely right in stating that not enough care is taken with the abdominal examination. Research substantiates his statement that the bacteria around the introitus are the same as on the skin. Dr. Sweetser asks, "Do we have more or less sepsis than we used to have?" Apparently we have not improved in this respect. We know that the United States is about the thirteenth on the list; it is almost the worst country in the world in regard to puerperal sepsis. I quoted figures from the Sloan Hospital for Women in New York, showing that the use of sterile rubber gloves reduced the incidence of sepsis from 1.13 to 0.61 per cent. Improvements in technic should have reduced the incidence of sepsis markedly, it would seem.

I do not believe that the women of today are weaker than they used to be, but we have conditions in the city now that are not analogous to those Dr. Sweetser had. In those days a woman was delivered in her own home, in which she had usually lived for many years and had become immune to the bacteria surrounding her. Today women are not so isolated. There are more opportunities for them to be in surroundings containing bacteria to which they are not immune. They move around from apartment to apartment, etc.

In this regard, unless a hospital is equipped with separate obstetrical and surgical wards and is so arranged that there can be no contact between obstetrical cases and a case of infection, that hospital is not a safe place for a maternity case. Dr. Watson and his co-workers at Sloan Hospital for Women did a most remarkable piece of research work in which they pointed out the fact that many infections are apparently projected from the nose and throat of attendants. Attendants should be masked as at surgical operations. In the Minneapolis General Hospital we have had to close down the Obstetrical Ward many times in the last fifteen years because of infections. Although we were not able to trace the source of infections absolutely, the presence of respiratory and general infections throughout the city was significant.

I feel that staying out of the vagina, when possible, is expedient. It is not everything, of course. Cesarean section statistics point to the danger of vaginal examinations. If you stay out of the vagina and do a cesarean section before labor begins, the expert can expect a mortality of about one per cent. A six-hour trial of labor will increase this to about two per cent.

In my opinion, one of the reasons we have not re-

duced our mortality is that students are taught so many ways of interfering and see such brilliant results of interference, but fail to realize the care that is exercised in choosing the case for interference and the care that is used in carrying out the aseptic technic. The result is that they interfere more frequently than they used to and, thus, improved methods of technic have been counterbalanced by increased unnecessary interference, with no improvement in results.

DR. HAMMOND: Regarding the question of visitors entering the maternity ward, Dr. LaVake has stressed the importance of attendants being masked in obstetrical cases. In this locality, or in St. Paul, two years ago we felt it would be a good thing to introduce a rule which is quite customary in a good many eastern hospitals, of excluding visitors as much as possible, particularly children. In this particular hospital we excluded all under 14 years. You can go up in the ward any day or evening during visiting hours and find two or three children lolling around on a bed. We introduced this rule and were surprised to find that some of our attending men were very much opposed to it. I would like to ask Dr. LaVake if that has been tried in Minneapolis? This procedure is taken as a matter of course in the East.

DR. ROTHROCK: I think that perhaps during the seasons when there are a great many respiratory infections that might be a very good thing to do. It is a potential source of danger certainly.

One other thing interested me. I started to practise obstetrics when everything was done in the home except cesarean section, yet it was comparatively rare that we saw a serious case of infection and I remember very well some twenty years ago when patients began to be sent to hospitals, it was not very long until I had half a dozen quite serious cases of infection in the hospital. Then the patients were scattered around in the hospital. I soon learned that the patient was probably safer if delivered at home and that if we wanted to avoid disaster in the hospital we must furnish our patients extraordinary protection. Soon hospitals set aside part of the building for obstetrical work exclusively. I believe that under such conditions you can get along pretty free from infection. One thing is important, *i.e.*, should a patient start to have a temperature, that patient should be immediately isolated until you know whether or not she has a serious infection.

DR. LAVAKE: From the pediatric standpoint, it is important to consider the question of visitors in the hospital. In time past we had several deaths of newborns which we thought could be directly traced to infections brought in by visitors. Since then we have made it a rule that children and all other visitors should be excluded from the mother's room while the baby is present. To my knowledge, we have never had a mother infected by a visitor. The mother can be careful not to allow a visitor to get near her. In the framing of rules, one must be practical. Few women would go into a hospital where no visitors are allowed and where they could not see their children.

Many men consider much of this talk concerning infections by the vaginal examination and the substitution

of the rectal examination as idle. To them refinement of technic is the crux of the matter. Care in technic is the major factor in the safety of a vaginal examination. There is no question about that. However, one cannot as surely render aseptic the vulva, the vagina, and cervix in labor as he can the abdominal wall in a gynecological examination and I feel that a peritoneum, barring trauma, will take care of pyogenic organisms better than will the genital tract lacerated by labor, especially the cervix. So, from the standpoint of an infection, we should approach labor with as much care as we do a major gynecological operation, as regards aseptic technic. The rectal examination I believe to be a step in advance in this regard.

DR. E. M. JONES (St. Paul) reported two cases of osteomyelitis. Numerous lantern slides were shown.

DISCUSSION

DR. OWEN PARKER (Ely): I was very much interested in Dr. Jones' case reports of osteomyelitis. Osteomyelitis is a large and interesting subject. We do not see a great many cases of acute osteomyelitis in our industrial mining community, although they occur most often in children and we have a school population of 2,500. Many of our cases are of traumatic origin as in some of the bad compound fractures, and in severe gunshot wounds. These are difficult cases to handle and give one much trouble. Most of the osteomyelitis cases due to gunshot wounds where there is a great comminution and infection of bone, are of long duration. I have in mind three cases, all occurring within the last three years and all of whom were infected and all of whom still have some trouble from osteomyelitis; one a severe gunshot wound of the upper end of the femur through the intertrochanteric region who also developed symptoms of tetanus and was given large doses of tetanus antitoxin intravenously; second, a gunshot wound shattering the ilium and injuring the lumbar spine; and third, a bullet wound fracturing the ilium and spinous process and lamina of the lower lumbar spine and injuring the cord slightly.

In acute cases, if one can operate early as he does in appendicitis one would save the patient and himself much trouble but not always. If they lapse into the subacute and chronic cases and go on to sequestrum formation and discharging sinuses, many operations are usually done before a final cure is obtained.

I recall one case of a lumberman quite a number of years ago who came to me with an old osteomyelitis of the tibia. He had previously been operated on several times and I operated on him at least three times, removing altogether a large part of the tibia and finally obtaining a complete healing of the bone with excellent function. He had been having trouble over a period of ten years. He is still doing hard work and has had no recurrence.

In the early diagnosis x-rays should be taken although they do not help us much except in a negative way. In the old chronic cases, of course, they are of greatest assistance in diagnosis. One has to be careful not to mistake the acute cases for arthritis or acute rheumatism, especially when they occur near joints.

This, of course, is an old warning occurring in the textbooks when we were students, but still seems to require mention. The relationship of osteomyelitis and trauma is an interesting one and of medico-legal importance, as was recently brought forcibly to my attention by a case of ours which was tried before the Industrial Commission.

Osteomyelitis is a large and interesting subject and I wish to compliment Dr. Jones on the presentation of these cases.

DR. J. L. ROTHROCK (St. Paul) reported the following "Unusual Case of Toxemia of Pregnancy."

Mrs. A., age 33, mother of three children and now about eight months advanced in her fourth pregnancy, was admitted to the Miller Hospital December 30, 1928, at 11 a. m., giving the following history:

Patient, the wife of a farmer, had, so far as is known, been well up to Christmas eve, when she went to a midnight church entertainment and the next day was taken with what was supposed to be an attack of influenza. She was first seen by her doctor on Thursday, the 27th; was at that time vomiting and gave a history of having vomited everything she took from the onset of her illness. She was not seen again until Saturday, the 29th, when her condition was found to be unchanged; the vomiting continued and it was then arranged to bring her to the hospital Sunday.

Examination on admission to the hospital disclosed the following symptoms: The extremities were cold, the skin suffused, the pulse rapid, 120, weak and scarcely countable at the wrist. Her mental condition was clear; said she felt well except for nausea, and was vomiting everything she took. She had a slight cough and on examination was found to have some râles in the larger bronchial tubes, indicating a slight bronchitis. Although she had taken cathartics there had been no bowel movement since the onset of her illness. She complained of no pain.

Examination showed her about eight months advanced in pregnancy but she had not felt motion the last two days and on careful examination fetal heart sounds could not be heard. Her doctor reported that he did not hear them at his first visit on Thursday and assumed that the fetus was probably dead. There was no distention or indication of obstruction of the bowels. There was no uremic odor of the breath. When awake she was unusually alert but slept most of the time, but on awaking showed no mental confusion.

On the morning of December 31, it was reported that she had passed no urine. On catheterization about 50 c.c. were obtained. This was very highly colored and contained only a trace of albumin but a few granular and hyaline casts. The patient still continued to vomit. She was passing at the rate of about 50 c.c. of dark colored urine in 24 hours.

January 1, 1929, vomiting still continues frequently. Vomitus is brown in color and small in amount, sometimes watery. About 3 p. m. the patient began to have pains and indication that she was falling in labor. At 8 p. m., the cervix being fully dilated, in order to conserve her strength, low forceps were applied and she was delivered of a stillborn macerated fetus. Vomiting

continued during the night. Patient catheterized and only 100 c.c. of urine obtained, notwithstanding copious hypodermoclysis, intravenous injection of glucose solution and proctoclysis.

January 2, vomiting continues, even though everything—fluids and food—have been withheld from time of admission to the hospital. During the day the patient was catheterized and 255 c.c. of urine obtained.

January 3, at 1:30 a. m., 525 c.c. of urine obtained by catheterization, at 5 a. m. 360 c.c., and at 7 a. m. the patient voluntarily passed 300 c.c. Patient still continues to vomit, and is becoming restless and fretful. Respirations are much labored. The patient is now wakeful and does not sleep.

January 4, the urine continued to increase in amount, passed voluntarily, vomiting is less and she begins to retain liquids. Is restless and at times slightly irrational. Temperature from date of admission has remained normal. She is now expelling flatus and frequent liquid stools of a very foul odor.

Takes fluids freely. Restless and irrational. Stools involuntary and patient seems very weak. Still takes liquids but not so well—growing weaker.

January 6, a. m., condition much the same. Pulse is rapid and weak and irregular. The patient continues to cough and temperature began to rise.

January 7, temperature 104°, pulse 134, involuntary stools and urine. Respiration shallow and irregular, pulse very weak. Patient has a vacant stare with eyes wide open and cannot be aroused. Does not recognize those about her. Temperature continued high all day reaching 105°, and death took place at 3:16 p. m. January 8th. Temperature before death 106°.

From the history the dominant clinical symptom was hyperemesis and this persisted throughout the course of the illness until within two days of death. These symptoms occurring in a pregnant woman, it was recognized that we were probably dealing with a profound toxemia, with, no doubt, profound pathological changes in the liver so that acute yellow atrophy was thought of. The jaundice, however, was absent; there was no leucin or tyrosin in the urine, and no demonstrable decrease in the size of the liver could be determined. There were no convulsions; still the thought of an atypical eclampsia had to be considered. Under these conditions only a tentative diagnosis was possible before death.

Laboratory Findings. Urinalysis: sp. gr. varied from 1014 to 1023; albumin varied from a trace to a light cloud, never very much. No bile present. Microscopic findings: a few granular and hyaline casts. No leucin or tyrosin.

Blood pressure taken on several occasions, and always below normal. Blood chemistry showed 23.4 mgms. sugar, 3.95 creatinin, 88.4 urea nitrogen. The Van den Bergh test 3.75 mgms. bilirubin. Basal metabolism was 34 per cent, based on an estimated weight. Van Slyke 80 per cent, and P.S.P. 27.5 per cent in four hours, with no excretion the first hour.

Blood count: hemoglobin 78 per cent, erythrocytes 4,270,000, leukocytes 13,300, polymorphonuclears 78 per cent.

The clinical picture of toxic degeneration of the liver, whether with hyperemesis or atypical eclampsia, has many points in common. Frequently the entire clinical course is characterized by hyperemesis, so that for many cases of hyperemesis occurring during pregnancy it is correct to say that toxic degeneration of the liver is a characteristic finding in those cases that go on to fatal termination. According to Seitz, the more pronounced liver changes in pregnancy allow themselves, from a pathological and anatomical standpoint, to be sharply differentiated into three distinct forms:

(1) Toxic degeneration of the liver characterized by diffuse fatty degeneration of the liver cells, without necrosis, and without diminution in the size of the liver clinically, taking the form of hyperemesis or presenting the picture of a general intoxication. There is no jaundice and no leucin or tyrosin in the urine.

(2) Acute yellow atrophy of the liver characterized by a diffuse fatty degeneration of the liver cells with widespread necrosis and with shrinking of the volume to one-half its size or less. Clinically the dominant symptoms are frequently hyperemesis and jaundice and leucin and tyrosin are present in the urine.

(3) Eclampsia characterized by the presence in the liver of localized areas of cell degeneration and necrosis following thrombosis of the smallest interlobular vessels and peripheral capillaries. Clinically it presents a picture of eclampsia with or without convulsions; in other words, typical or atypical eclampsia. The anatomical changes found in the liver are characteristic and are found exclusively in patients dying of eclampsia. In this respect the liver of eclampsia differs from toxic degeneration of the liver and acute yellow atrophy as the same changes are sometimes found in men and non-pregnant women, so that they seem to bear no relation to pregnancy, as various forms of poisoning will give rise to similar lesions, notably phosphorus, chloroform, and chloral.

In the present case, the question arises if this patient had influenza, to what extent might the toxins of influenza (which we know is very fatal to pregnant women) have had to do with the toxic degeneration of the liver?

According to experience, this form of toxic degeneration of the liver is very fatal and by the time the symptoms are well established irreparable damage is done and the case is practically hopeless.

DISCUSSION

DR. H. L. ULRICH (Minneapolis): More and more attention is being called to this type of case. We are getting more aware of them. We see them occasionally in the practice of Internal Medicine.

There are three types of acute liver insufficiency—the focal necrosis type of eclampsia, the acute yellow atrophy, and the acute fatty liver.

All the data on the blood are significant and could be induced by renal stoppage, intestinal obstruction, or liver insufficiency. The alkalosis no doubt was due to dehydration and dechlorination from hyperemesis. Since

clinically we can rule out intestinal obstruction and a renal insufficiency, the only other organ left is the liver.

We must be more acute in our analysis of these cases. We can differentiate the acute yellow atrophy from the eclamptic and fatty type. To differentiate the two latter is a more difficult task unless we use the criterion of convulsions. I see no reason why we can exclude convulsive seizures in any of these insufficiencies.

There is no laboratory method as yet devised to tell us what type of insufficiency we are dealing with. We are again thrown back on clinical methods. Even here the clinical end-result will only be of value in prognosis, which is usually fatal.

The meeting adjourned.

CARL B. DRAKE, M.D.,
Secretary.

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

MEDICINE

SUPERVISORS:

F. J. HIRSCHBOECK,
205 W. 2nd STREET, DULUTH

THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

PATHOGENESIS OF PULMONARY TUBERCULOSIS AND ITS COMPLICATIONS: Aaron Aikin (*Amer. Rev. of Tuberc.*, August, 1929, Vol. XX, No. 2, p. 243). Attempts have been made to classify tuberculosis, based on pathology, on clinical findings and on x-rays.

In 1914 Nicoll differentiated chronic tuberculosis into exudative and productive forms. The x-ray can distinguish the above, yet it cannot show whether an exudative lesion has undergone caseous necrosis or is simply a congestive or gelatinous pneumonia. In fact, exudative and productive changes are frequently associated, and an exudative focus can be replaced by a productive fibrous nodule, or entirely disappear.

Graff and Kupferle have advanced x-ray knowledge to the point where one recognizes the indistinct border of exudative caseous foci with a dark center. Productive nodular foci produce separate, dense, sharply outlined shadows. These differentiations are of aid in diagnosis and prognosis.

Repeated x-ray studies are necessary for prognosis, as mistakes are common in single plates.

Neumann of Vienna has evolved a classification in three stages, based on the fact of the primary stage in childhood, characterized by a primary broncho-pneumonic focus, with lymphogenic propagation to the bronchial lymph nodes. The second stage is characterized by hematogenous metastases, in lungs or other organs. The third stage is the bronchogenic phthisis or isolated organic phthisis, spread by the bronchial passages.

The value of the differentiation of the latter two adult stages is the difference in prognosis.

The hematogenous form is usually benign. Even with advanced systemic evidences the disease may last decades.

The course in the tertiary stage is different. Death occurs almost invariably within eight years unless surgical interference is instituted early.

The primary stage is usually the result of aerogenic infection. The result is an area of broncho-pneumonia and is therefore an exudative lesion. It may undergo one of several changes:

1. Enlarge to occupy an entire lobe.
2. Calcify.
3. Disappear.
4. Become inactive, to show an acute exacerbation in later life.

Associated with the development of this primary focus is the involvement of the hilus nodes, with streaks or bands running from the primary focus. These nodes may caseate and slowly develop calcified areas. The primary complex may progress until the tubercle bacilli reaches the blood stream. A meningitis or a miliary tuberculosis than results.

The second stage is the period of hematogenous disseminations. This usually occurs about the age of puberty. There are various grades:

1. Malignant proliferation, usually in individuals with low resistance.
2. Virulent proliferation, characterized by many tubercles (4 types):
 - (a) Typho-tuberculosis: This form usually shows surgical tuberculosis. Age incidence 13 to 18 years.
 - (b) Polyserositis: Entrance through pulmonary artery, with resulting pleuritis. Polyserositis is often the result.
 - (c) Diffuse fibroid tuberculosis. Scattered tubercles, chiefly apical and infra-clavicular—usually bilateral.
 - (d) Dense fibroid tuberculosis: Bilateral induration of both apices from productive changes in hematogenous tubercles. Ulceration and stationary cavities may follow.
3. Gland proliferation. Benign form of pulmonary tuberculosis. Few foci in apices, usually bilateral.

The third stage begins as the incipient bronchogenic phthisis of adults. This is the type seen at puberty or following pregnancy. The onset is acute tuberculosis. Broncho-pneumonia follows usually, after rupture into

bronchus. Shadows in this type are usually lobar in distribution.

The author believes both edogenous and exogenous reinfection possible; occasionally simultaneous. Hence, efforts should be made to develop not only individual resistance but to provide against reinfection.

R. P. BUCKLEY, M.D.

SURGERY

SUPERVISORS:

DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

ACUTE PANCREATITIS—AN ANALYSIS OF EIGHTY-EIGHT CASES WITH ESPECIAL REFERENCE TO DIAGNOSIS: Wm. Linder, M.D., and Louis J. Morse, M.D., Brooklyn, N. Y. (*Ann. of Surg.*, Vol. XC, September, 1929). The authors reviewed a series of cases and believe that acute pancreatitis can be diagnosed before operation, because of the differentiating symptom-complex which it presents, in comparison to other acute upper abdominal conditions.

There have been many theories propounded and experiments performed to determine the etiology of acute pancreatitis and a few are here briefly given.

1. Pyemia, although early isolation of bacteria has never been accomplished.

2. By contiguity from gastric or duodenal ulcers, although no such pathological lesions were observed in this series.

3. Regurgitation of duodenal contents may produce acute pancreatitis, and, although this is probably a rare procedure, it has been experimentally produced by injecting enterokinase into the duct of Wirsung.

4. The fact that the lymphatics of the biliary tract and the pancreas are supposed to be closely connected has led Naaugeret, Ansperger, and Deaver to believe in lymphogenous extension.

5. Retrojection of bile into the pancreatic duct. Of the four types of papillæ of Vater possible embryologically, two will permit this condition. A biliary stone obstruction or a spasm of the sphincter of Oddi will cause an influx of bile in the pancreatic duct and cause acute pancreatitis, when the bile is infected, the proportion of salts increased or under increased pressure.

Acute pancreatitis is not a primary disease, but a sequela, and biliary disease is usually a forerunner. Egddall found biliary calculi in 50 per cent of his cases and 75 per cent complained of gall-bladder symptoms.

In their analysis, the authors have taken the presence of fat necrosis as their basis of diagnosis, although they mention that acute pancreatitis may occur with only the presence of acute pancreatic edema.

Females constituted 88 per cent of the cases.

Fifty per cent occurred in the fourth and fifth decades; the youngest was 19, and the oldest 70.

Fifty-three per cent gave a definite history of biliary disease, and all but 8 complained of dyspepsia.

Localized pancreatic irritation and toxemia are caused by activation of trypinogen into trypsin and the protein digestion by this enzyme with the liberation of lipase. The resulting edema of the pancreas causes biliary obstruction, and pain by stretching of the capsule. Hemorrhagic features are caused by digestion of blood vessels. And, lastly, the peritoneal inflammation results from the irritants of the catabolic process.

Symptomatology.—Pain is very severe and repeated doses of morphine fail to relieve it. Ninety-seven per cent had constant epigastric pain and other associated locations were: right hypochondriac, 67 per cent; left lumbar backache, 66 per cent; left hypochondriac, 41 per cent; and generalized abdominal, 19 per cent.

Vomiting was present in eighty-five cases. It is never progressive or fecal, and can usually be relieved by one gastric lavage.

Shock, collapse, cyanosis and dyspnea usually occur. Forty per cent were cyanotic and seventeen were in shock.

Temperature is of no value, but of interest is the temperature-pulse ratio, with the latter rising out of all proportion to the temperature elevation.

Jaundice was present in twenty-eight patients and never severe.

Peritonitis may be of a local or diffuse variety.

Constipation is the rule but not complete, as in intestinal obstruction.

Because of its similarity with other upper abdominal conditions, acute pancreatitis should be clearly differentiated.

Acute cholecystitis; palpable mass under the liver margin, thoracic breathing, and, in case of perforation with shock and peritonitis, a preëxisting gall-bladder history should make the diagnosis.

High acute intestinal obstruction; early visible peristalsis, progressive vomiting, painless abdomen and no epigastric tenderness (with radiation to the left), or lumbar pain.

Acute renal colic without radiation of pain; pyuria.

Torsion of a ptotic kidney; history of ptosis in a patient with considerable weight loss and a sudden physical exertion. Kidney is palpable.

Acute hematogenous infection of the kidney; antecedent history of focal infection, with sudden chill, rise in temperature, and lumbar tenderness or spasticity.

Perforated gastric or duodenal ulcer; ulcer history, board-like rigidity, scaphoid abdomen, early general peritonitis, gas in peritoneal cavity, and expiratory grunt.

Operative findings and treatment.

Fat necrosis, 100 per cent; gall-bladder disease, 84 per cent; biliary calculi, 61 per cent; serosanguineous exudate, 59 per cent; granular omentum, 43 per cent.

The immediate treatment is to open the pancreatic capsule and relieve pressure, and, if the condition of the patient warrants, do a cholecystectomy to remove the source of infection.

The mortality rate was 26 per cent and the authors believe that proper early treatment of gall-bladder

disease will reduce the mortality rate of acute pancreatitis.

L. C. THOMAS, M.D.

treatment should be vigorously carried out in the hope that degenerative changes had not taken place, or that the change may not be beyond recovery.

R. N. ANDREWS, M.D.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

RESEARCH IN CONNECTION WITH ACUTE POLIOMYELITIS: A. E. Vipond, M.D., Montreal (Arch. of Ped., August, 1929, Vol. XLVI, No. 8). In the Lancet for January 7, 1928, appeared a very interesting article on acute poliomyelitis by Dr. Kinneir Wilson. He believes that patients who suffer from this disease should be isolated, also that the sole specific treatment consists in intraspinal injection of immune serum, a method which has been used with moderate success.

The blood serum, taken from patients who have had this disease and injected in others, seems to produce immunity, the same as obtains in scarlet fever.

The author has a method of his own in the treatment of poliomyelitis. He collects the urine early in his cases. A little catheterized urine is allowed to fall into a blood serum tube and placed in the incubator. Streptococcal strings were found in every instance where he took a catheterized specimen. From this a vaccine was made.

In one case, on August 15, about 1 c.c. of the vaccine, which equals 500,000,000 streptococci was used. August 16, the sole reflex was present. August 17, the child could stand on both legs. August 18, he could walk. He was given four inoculations in all, 1 to 2 days apart. In all cases in which vaccine was used early, remarkable results were obtained.

Professor Wray of McGill University pointed out how degenerative changes took place at an early date in the spinal cord. He states that degenerative changes take place in three days from the onset of the disease. We cannot expect that cases which recover spontaneously, or as the result of treatment, have suffered from much, if any, degenerative changes in the spinal cord. He is fully convinced that up to the third day and even in some, up to the tenth day that many degenerative changes may have taken place. The early condition is an irritation of the anterior cells of the cord followed by hyperemia and by hemorrhage into the cord at the anterior portion.

In every instance where the treatment began in the early stage of the disease, a perfect recovery took place. Even 10 days from the onset of the trouble

SOME OBSERVATIONS OF THE RESULTS FOLLOWING THE USE OF DRY MILK IN INFANT FEEDING EXTENDING OVER A PERIOD OF TEN YEARS: M. M. McCord, M.D., Rome, Ga. (Arch. of Ped., September, 1929, Vol. XLVI, No. 9). Bonnamour found that dry milk was extremely useful and especially valuable in cases of sickly infants, who, while unable to digest milk in other forms, yet could take dry milk readily and make good progress.

Naish says: "I have followed up a considerable number of infants fed on dried milk and I am personally convinced that there is no more risk of rickets with this diet than with a good quality of raw cow's milk."

Millard states: "Dry milk had one most important advantage—greater digestibility. Many infants would retain it and at once begin to thrive who had previously been continuously subject to vomiting after each feeding, and in consequence were making little or no progress."

Hill says: "Dried milk undoubtedly has a place in infant feeding. It has come to stay and while I by no means agree with those who would use it in the majority of their difficult feeding cases, there is no question that it sometimes works remarkably well."

Klein published a report of experiments in which tuberculous milk dried by the Eckenberg roller process was used. Guinea pigs inoculated with the infected fluid milk showed definite tuberculous lesions after twenty-one days, whereas those inoculated with the dried product did not show these lesions on post-mortem examination after the same period.

Hart, Steenbock, and Ellis say: "Probably with all milk powders, irrespective of method of manufacture, the safest procedure is a restricted dietary, particularly in infant feeding, and to supplement them with some potent source of antiscorbutic vitamin." A possible exception to this statement would apply to the powders made by the Just or roller process from the summer produced milks where the cows are made rich in the antiscorbutic vitamin by the proper selection of roots and tubers.

Mackay and Shaw find that rapid healing of bone lesions in children can be brought about by the use of dry milk irradiated with the ultra-violet light from the mercury arc. Dry milk is evidently more soluble and more digestible than liquid milk. Therefore in the case of a 12 per cent dry milk, made by the Just roller method, the infant gets all the fats in contrast to milk much higher in fats where much of it is not utilized by the infant.

The great danger of liquid milk, especially in the summer months, is contamination of it with dangerous bacteria, which cannot always be recognized until the danger is done. Drying milk by the Just roller process evidently destroys all dangerous organisms without destroying the value of the milk as a food.

R. N. ANDREWS, M.D.

ROENTGENOLOGY

SUPERVISORS

LEO G. RIGLER

MINNEAPOLIS GENERAL HOSPITAL,
MINNEAPOLIS

A. U. DESJARDINS
MAYO CLINIC, ROCHESTER

CONGENITAL BONE SYPHILIS: E. P. Pendergrass, M.D., and R. S. Bromer, M.D. (*Am. Jour. Roent.* July, 1929, Vol. XXII, No. 1, pp. 1-21). The authors first review the two methods of ossification of bone, endochondral and intramembranous. The diaphyso-epiphyseal junction (epiphyseal line) is a narrow, unbroken dense line and corresponds to the limit of advancing ossification. It is very important because of the changes which occur there in rickets, scurvy, congenital syphilis and acute leukemia. Congenital syphilis may manifest itself as an osteochondritis, the most common form, or as a diaphysitis or a periostitis. One or all of these conditions may be found in the same patient.

It has been recognized that bone lesions are associated frequently with congenital syphilis and may be the only evidence of the disease. Osteochondritis may be divided into three stages. Periostitis and diaphysitis usually accompany the third stage of osteochondritis, or they may occur individually as the only evidence of the infection but this is relatively rare. Periostitis is rarely seen in the still born; more often it occurs in the older infant, that is, an active child.

Congenital syphilis of the bones is not a general systemic infection but is due to the local presence of the spirochetes or their toxins. It may involve one or all the bones of the body so that an examination should not be regarded as negative until the entire skeleton has been examined. The point of election for the lesions is in the bones of more active normal growth; these being the lower end of the femur, lower end of radius, upper end of tibia, and upper end of femur in the order named.

The authors point out a new roentgenological sign, epiphysitis, which has hitherto not been described, and the description is based on a study of their own cases. It is divided into three stages and discussed with osteochondritis.

The differential diagnosis of congenital syphilis is from rickets and infantile scurvy. Congenital syphilis is more often found in the new-born or in early infancy whereas rickets and scurvy rarely occur before the fourth month. Each has its characteristic roentgen manifestation in the endochondral bone growth area.

This includes the epiphysis, with the epiphyseal center of ossification when present, the diaphyso-epiphyseal junction, the zone of temporary calcification and the zone adjacent to it on the shaft side. Each of these is discussed.

The effect of treatment on the bone lesions will be published in a later report. Preliminary observations indicate that the osteochondritis responds more quickly than the periostitis.

JACOB SAGEL, M.D.

EYE, EAR, NOSE AND THROAT

SUPERVISORS:

VIRGIL J. SCHWARTZ,
PHYS. & SURG. BLDG., MINNEAPOLIS

ARTHUR C. DEAN
CROOKSTON CLINIC, CROOKSTON

THE RELATIONSHIP OF SINUSITIS AND BRONCHIECTASIS. Quinn and Meyer, Madison, Wis. (*Arch. of Otolaryng.*, Aug., 1929, Vol. 10, No. 2, 152). It is not yet well enough known that many patients with symptoms suggesting pulmonary tuberculosis, but with repeatedly negative sputum, may have bronchiectasis, usually associated with chronic infection of the upper respiratory tract. Far too often these patients are treated for long periods in sanatoria for tuberculous patients. In cases of bronchiectasis from all causes it has been determined that sinusitis is of frequent occurrence. Complete investigation of the paranasal sinuses should be made in every case. Definite sinusitis has been found to be present in 57.9 per cent of a series of our cases. The large majority have no subjective symptoms of sinusitis and only a few complained of nasal or postnasal discharge. It is quite generally accepted that aspiration of infected material from the sinuses is possible. It is further assumed that this aspiration occurs chiefly when the person is asleep or at least in the recumbent position.

CONCLUSIONS

1. 57.9 per cent of our series with bronchiectasis were found to have a co-existent sinusitis.
2. The patients with sinusitis were considerably younger than those without.
3. The majority had no symptoms of sinusitis.
4. Aspiration of an oily fluid from the nose is so easy that it seems logical to believe that aspiration of infected material might also be easy.

ARTHUR C. DEAN, M.D., F.A.C.S.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

BOOKS RECEIVED FOR REVIEW

SURGICAL AND MEDICAL GYNECOLOGIC TECHNIC. Thomas H. Cherry, M.D., F.A.C.S., Professor of Gynecology, New York Post-Graduate Medical School and Hospital, etc. 678 pages. Illus. Cloth, \$8.00. Philadelphia: F. A. Davis Company, 1929.

A STUDY OF MASTURBATION AND THE PSYCHOSEXUAL LIFE. John F. W. Meagher, M.D., F.A.C.P., Neurologist St. Mary's Hospital, Brooklyn; Neurologist Mary Immaculate Hospital, Jamaica, etc. Second edition. 130 pages. Cloth, \$2.00. New York: William Wood & Company, 1929.

VARICOSE VEINS. H. O. McPheeters, M.D., Director, Varicose Veins and Ulcer Clinic, Minneapolis General Hospital. 208 pages. \$3.50. Philadelphia: F. A. Davis Co., 1929.

Although the practice of obliteration of varicose veins by the injection method is by no means a new one, there has been so much written lately on the subject that one heralds with interest the publication of a small book summarizing the developments in this work.

The anatomical, embryological and pathological aspects of the subject of varices have been fairly well covered. Ample mention of work by various authors, both domestic and abroad, makes these chapters distinctly valuable.

Etiology has been covered in a broad way, mention of the various opinions of foreign authors being made. Reference is made to the age-sex factors, endocrine, infection, inflammatory and mechanical views of the etiology.

The diagnosis and differential diagnosis is rather disappointing. A rather sketchy description of Trendelenburg's sign is made but there is no mention of how one should proceed to elicit this sign. VonPerthe's modification of Trendelenburg's sign is mentioned but not enlarged upon. It is felt that a book should be an explanation of all phases of the subject covered, going into fine detail in its description of tests and diagnostic methods and further elucidation on the various types of Trendelenburg's sign would be beneficial.

Ulcer crura and the various complications of varices have been described.

Treatment by general, operative, and injection methods has been well covered, and, as one would expect, the section on injection treatment is gone into fully. The various solutions which are being or have been used are mentioned but particular stress is laid upon the author's choices. Calorose and 20 per cent sodium

chloride are given first place, with the use of bichloride of mercury, sodium salicylate or quinine and urethane as occasion arises.

Pathology of post-injection conditions in the veins is described very well.

The very common occurrence of ulcer crura, and its importance because of the marked disability and discomfort produced, is a subject of constant concern. It is gratifying to find this question covered so completely and the treatment so ably presented.

The impression one receives after reading this book is that there is too much repetition of thought and that the material is used to make a much bigger monograph than the subject deserves. Apart from this one disappointing feature, the work is quite interesting and worthy of the time consumed in reading it.

GEORGE WILLIAMSON, M.D.

SPINAL ANESTHESIA. Charles H. Evans, M.D. New York Post Graduate Medical School and Hospital. Introduction by W. Wayne Babcock. Foreword by Charles Gordon Heyd. 203 pages. Illus. Cloth, \$5.50. New York: Paul Hoeber, 1929.

This volume presents an extremely conservative and well balanced review of the subject of spinal anesthesia. There are essentially two safe forms of technic in introducing spinal anesthesia. The author presents the method of dissolving powdered neocain in the spinal fluid direct, with immediate re-injection. The advantages and disadvantages are thoroughly given; and, best of all, the indications and contraindications are completely analyzed. From my own experience, I can agree with every statement this author makes and recommend this work to any one desiring to master the intricacies of spinal anesthesia. The author avoids the use of the anesthesia above the diaphragm. The chief advantages of this form of surgical aid pertain to abdominal operations, and it is in the abdominal region that there is least danger. The higher levels are not safe. This is all brought out in scientific detail with the aid of careful diction, accurate spelling and a large number of pictures. The printing is large, clear-cut, on heavy paper and the work is such as to be readable in one or two evenings. A very commendable volume within the comprehension of any surgeon who desires to add spinal anesthesia to his anesthetic armamentarium.

DANIEL H. BESSESEN, M.D.

GENERAL SURGERY. Evarts A. Graham, A.B., M.D., Professor of Surgery, Washington University Medical School. Practical Medicine Series. 800 pages. No price quoted. Chicago: Year Book Publishers, 1928.

This most interesting book of about seven hundred pages is packed with reports of unusually interesting cases, instructive extracts of various reports on research, and summaries of the developments in surgery in the past year.

Mention must be made of the reports on the treatment of erysipelas with Birkhaug's serum, the use of colloidal lead in the treatment of carcinoma, and the

control of postoperative or paralytic ileus by the use of splanchnic anesthesia.

The work on the use of carbon dioxide at the beginning and end of narcosis is reported. The improvements in pulmonary ventilation with the resulting speedier narcosis and earlier awakening of the patients demonstrates conclusively the value of this measure.

Sir G. L. Cheatle writes on carcinoma of the breast, urging patients to consult their surgeons if they experience pain in their breasts, bloody or serous discharge from the nipples, and not to wait for the development of the later sign of tumor formation.

The subject of pulmonary suppuration of various types is afforded generous extracts and is most valuable for anyone interested in the subject.

The question of diagnosis in pancreatic disease received some valuable assistance by the new tests outlined in the work by Elman and McCaughan.

Judd, of the Mayo Clinic, reports on 1,897 cases of gastro-duodenal ulcers, designating gastro-enterostomy as the most suitable surgical procedure. The popularity of extensive resections of the stomach is fast on the wane.

Interesting extracts on the injection treatment of varicose veins, the use of iodine in goiter prophylaxis and treatment, and Illingworth's report from Wilkie's Clinic on the types of gall-bladder infections also deserve mention.

An interesting little trick in the differential diagnosis of tumors is reported by Gosselin. If an ice bag is applied to the swelling which is to be differentiated from a lipoma or other fluctuating swelling and the mass becomes hard, the tumor is undoubtedly a lipoma, as this is the only tumor which will harden under the influence of cold. This simple procedure might easily prove valuable at times.

GEO. A. WILLIAMSON, M.D.

SYMPTOM DIAGNOSIS, REGIONAL AND GENERAL. Wilfred M. Barton, A.M., M.D., F.A.C.P., Associate Professor of Medicine, Medical Department of Georgetown University, and Wallace M. Yater, A.B., M.D., Fellow in Medicine, Mayo Foundation, Rochester. Cloth. Price, \$10. Pp. 851. New York: D. Appleton & Company, 1927.

The book is intended for a quick and ready reference for the physician while the patient is being prepared for examination or may be considered as a quick review of differential diagnosis. The authors have endeavored to present the symptoms in the most practical way for the making of a diagnosis. The symptoms and signs are grouped as regional or general and the symptoms cover those of practically all medical and surgical conditions. The book is primarily for the office desk and has no place in the library. It should be particularly useful to the busy practitioner who wishes to refresh his memory very quickly.

A. E. CARLLE, M.D.

SYPHILIS — ACQUIRED AND HEREDITARY. Charles C. Dennie, B.S., M.D., Asst. Professor of Dermatology and Syphilology, University of Kansas School of Medicine. 304 pages. Illus. Price, \$2.50. New York: Harper and Bros., 1928.

In this monograph the subject is presented in a lucid, interesting manner. While going into sufficient detail it does not go into statistics and minute details in which the specialist only is interested. But on the other hand it covers the subject very well for the average practitioner.

On page 225 a few typographical errors are found which might lead to serious consequences. The given dosages of neoarsphenamine at 6 months of age and sulpharsphenamine at the ages of 6 months and one year are ten times as large as intended.

H. D. DIESSNER, M.D.

NO DRUG CURES FOR CANCER IN INTERSTATE COMMERCE NOW

Drug cures for cancer do not exist in interstate drug trade to-day, say officials of the food, drug, and insecticide administration, United States Department of Agriculture, who are charged with the enforcement of the Federal food and drugs act.

During the last 22 years, a total of 68 notices of judgment have been issued against 42 so-called cancer cures. In the rare cases in which cancer cures enter interstate commerce to-day, they are seized at once and their shipper held liable for prosecution.

The Sherley amendment to the food and drugs act regulating the therapeutic claims for drugs was passed by Congress in 1913, as the result of circumstances arising out of a suit by the Government against Doctor Johnson's Mild Combination Treatment for Cancer. The case was carried to the Supreme Court, where a decision was rendered against the Government on the

grounds that no provision existed in the food and drugs act that controlled curative claims for drugs.

With the recommendation of President Taft, Congress passed the amendment, which states that any drug will be deemed to be misbranded "if its package or label shall bear or contain any statement, design, or device regarding the curative or therapeutic value of such article or any of the ingredients or substances contained therein, which is false and fraudulent."

Enforcement of the food and drugs act since the passage of the Sherley amendment has resulted in the revisions of labels of thousands of medicinal preparations. It has further resulted in ridding the interstate drug trade of such obviously false and fraudulent products as tuberculosis cures, youth rejuvenator, cancer, and gonorrheal treatments and cures.

While there are still many misbranded products on the market, the administration is continually giving attention to these to the end of insuring a truthfully labeled drug supply to the American public.

WANTED—Staff physician for Minnesota State Hospital. Either single or married man. Suitable accommodations for married man will be furnished with maintenance. Salary \$150 monthly. Address D-48, care MINNESOTA MEDICINE.

WANTED—Salaried appointments for Class A Physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

DENTIST WANTED—To take over well established practice recently vacated by dentist taking up institutional work in New York City. Town, 500, large territory; good office rooms—heat, light and running water. Rent reasonable. Nothing to buy. Give references. Address D-38, care MINNESOTA MEDICINE.

WANTED—Office or industrial position in Twin Cities by graduate nurse with private duty and office experience. Address D-47, care MINNESOTA MEDICINE.

WANTED—Position in reputable hospital or clinic, preferably Minneapolis or Saint Paul, by thoroughly trained and experienced laboratory technician, B.A., with accredited postgraduate course in routine laboratory technic, including metabolisms, tissues, Wassermann's, et cetera. Successfully managed laboratory in Eastern Clinic. Best of references. Address D-45, care MINNESOTA MEDICINE.

WANTED AT ONCE—Position as doctor's assistant. Minneapolis preferred. Ten years' experience as practical nurse. Some office experience. Used to meeting public. Good appearance. Telephone, South 4250, Minneapolis.

FOR SALE—Doctor's complete office equipment, mahogany desk, McCaskey filing cabinet, bookcase, chairs and instruments. Price very reasonable. Call Emerson 2273, Saint Paul, or write D-46, care MINNESOTA MEDICINE.

GOOD LOCATION—For physician at Cleveland and Marshall Avenues, Saint Paul. See Dr. L. M. Peifer, second floor over drug store.